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VOL. LI No. 7 — JULY 1936

The American City

Issued Monthly by the

American City Magazine Corporation
470 Fourth Ave., New York
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•

BRANCH OFFICES
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•

Subscription, $2 per annum in United States and Canada ($3 to foreign countries)
Single copies, 35c
Back numbers available

Entered as second-class matter, July 29, 1910, at the Post Office at New York, N. Y., under Act of March 3, 1879. Printed in U. S. A.

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In THE MUNICIPAL INDEX AND ATLAS (the annual reference volume of data and condensed catalogs published by the American City Magazine Corporation) readers will find statistical material, and articles on a wide variety of municipal and public works subjects, not published in the monthly issues of the magazine.

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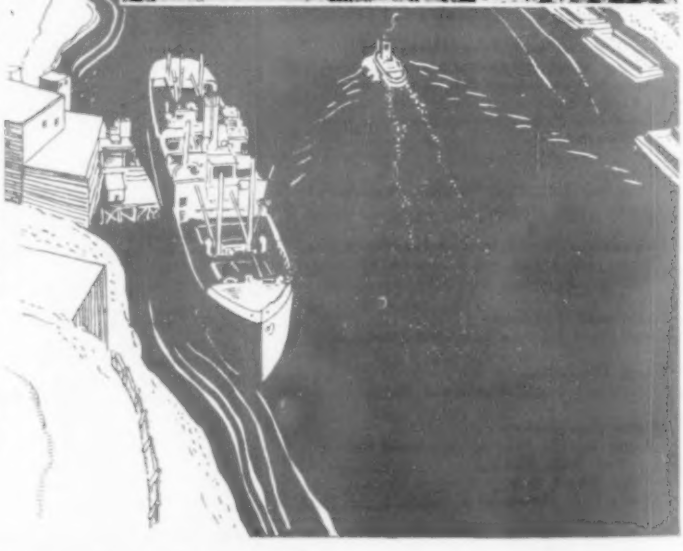
IN HOUSTON TEXAS

BUSINESS SECTION OF HOUSTON FROM THE AIR



No other Southern City has a more interesting or romantic background than Houston, named after General Sam Houston, hero of the battle of San Jacinto, where the Republic of Texas achieved independence from Mexico.

Houston's rise to metropolitan proportions is based on its swift growth as an industrial and shipping center. It is the nation's leading cotton port and spot cotton market, ranks third in exports and sixth in total foreign commerce. The largest city in the State of Texas, Houston is recognized as the outstanding petroleum producing, refining and shipping center of the world, one of the most important lumber markets of the South, while eighty-five per cent of the sulphur of the world is produced in the nearby area. Adequate marine, rail and air line transportation facilities serve this community.

The Pittsburgh Meters being used in the program to make a 100% metered distribution system are helping to protect the investment Houston has in its water works.

PITTSBURGH EQUITABLE METER CO.

MERCO NORDSTROM VALVE CO.

MAIN OFFICES PITTSBURGH, PA.

NEW YORK	LOS ANGELES	TULSA	HOUSTON	MEMPHIS	BUFFALO
COLUMBIA	KANSAS CITY	CHICAGO	PHILADELPHIA	ATLANTA	OAKLAND

PITTSBURGH WATER METERS

New Public Works Funds—Platform Pledges

WPA Gets $1,425,000,000; PWA, $300,000,000

UNDER the terms of the Emergency Relief Appropriation Act of 1936, one of the last measures enacted by the recent Congress, there is added to the unexpended balances of the Works Progress Administration funds a new appropriation of $1,425,000,000, to be allocated by the President substantially as follows:

Highways, roads, and streets	$413,250,000
Public buildings	156,750,000
Parks and other recreational facilities, including buildings therein	156,750,000
Public utilities, including sewer systems, water supply and purification, airports, and other transportation facilities	171,000,000
Flood control and other conservation	128,250,000
Assistance for educational, professional and clerical persons	85,500,000
Women's projects	85,500,000
Miscellaneous works projects	71,250,000
National Youth Administration	71,250,000
Rural rehabilitation loans and relief to farmers and livestock growers	85,500,000
Total	$1,425,000,000

Among the provisions of the Act of special interest to municipalities are the following:

"The rates of pay for persons engaged upon projects under the foregoing appropriation shall not be less than the prevailing rates of pay for work of a similar nature as determined by the Works Progress Administration with the approval of the President.

"The President is authorized to prescribe such rules and regulations as may be necessary to carry out the purposes of the foregoing appropriation: Provided, however, that in the employment of persons, applicants in actual need whose names have not heretofore been placed on relief rolls shall be given the same eligibility for employment as applicants whose names have heretofore appeared on such rolls: Provided further, that the fact that a person is entitled to or has received either adjusted-service bonds or a Treasury check in payment of an adjusted-compensation certificate shall not be considered in determining actual need of such employment.

Funds for the Works Progress Administration

"In order to increase employment by providing for useful public works projects of the kind and character for which the Federal Emergency Administrator of Public Works (hereinafter called the Administrator) has heretofore made loans or grants pursuant to Title II of the National Industrial Recovery Act or the Emergency Relief Appropriation Act of 1935, the Administrator may, upon the direction of the President, use not to exceed $300,000,000, from funds on hand or to be received from the sale of securities, for the making of grants, to aid in the financing of such projects: Provided, that no part of the sum made available by this paragraph shall be granted for any project unless, in the determination of the Administrator, the completion thereof can be substantially accomplished prior to July 1, 1938, and adequate provision has been made or is assured for financing such part of the entire cost thereof as is not to be supplied through the Federal Emergency Administration of Public Works: Provided further, that this limitation upon time shall not apply to any project enjoined in any Federal or state court: Provided further, that in no case shall the amount of the grant exceed 45 percentum of the cost of the project. Nothing herein shall be construed to increase the amount of notes, bonds, debentures, and other such obligations which the Reconstruction Finance Corporation is authorized and empowered under existing laws to issue and to have outstanding at any one time, and nothing herein shall be construed to limit or curtail in any way any powers which the Federal Emergency Administration of Public Works or the Administrator is now authorized to exercise."

Anticipating the Congressional action which has since been taken, Mayor F. H. LaGuardia of New York, as President of the United States Conference of Mayors, issued on June 17 a letter to cities having approved PWA applications for loans and grants, suggesting that they amend, where possible, their applications to request the grant only and secure the loan part through private channels. Mayor LaGuardia's statement said in part:

"It is recognized that when and if funds are made available to the PWA, Secretary Ickes must of necessity adopt certain rules of eligibility and priority. In other words, projects will be selected from the full list of about 3,500 approved and pending projects if they come up to certain standards. These standards in all probability will be the following:

"1. Is the project one for which a *grant only* is requested?

"2. Does the city have the balance of funds required to carry out the project on hand?

"3. Is the project one for which plans and specifications are ready and upon which construction could be started promptly?

"In order for the PWA to make the fund *do the most work*, projects upon which a grant only is requested will be preferred; for every dollar that is loaned reduces the amount of funds available for grants and in turn reduces the amount of construction which can be undertaken."

What the New Platforms Promise on Public Works and Unemployment Relief

From the Republican National Platform:

"The necessities of life must be provided for the needy, and hope must be restored pending recovery. . . . We pledge:

"1. The return of responsibility for relief administration to non-political local agencies familiar with community problems.

"2. Federal grants-in-aid to the states and territories while the need exists upon compliance with these conditions: (a) a fair proportion of the total relief burden to be provided from the revenues of state and local governments; (b) all engaged in relief administration to be selected on the basis of merit and fitness; (c) adequate provision to be made for the encouragement of those persons who are trying to become self-supporting.

"3. Undertaking of Federal public works only on their merits and separate from the administration of relief.

"4. A prompt determination of the facts concerning relief and unemployment."

From the Democratic National Platform:

"We believe that unemployment is a national problem, and that it is an inescapable obligation of our Government to meet it in a national way. . . . We shall continue to maintain that the first objective of a program of economic security is maximum employment in private industry at adequate wages. Where business fails to supply such employment, we believe that work at prevailing wages should be provided in cooperation with state and local governments in useful public projects, to the end that the national wealth may be increased, the skill and energy of the worker may be utilized, his morale maintained, and the unemployed be assured the opportunity to earn the necessities of life.

"We maintain that our people are entitled to decent, adequate housing at a price which they can afford. . . . We believe every encouragement should be given to the building of new homes by private enterprise, and that the Government should steadily extend its housing program toward the goal of adequate housing for those forced through economic necessities to live in unhealthy and slum conditions."

Your Judgment is as Good as Bonded

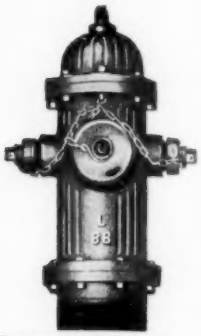
when you specify

CHAPMAN VALVES

You can be sure that maintenance costs will stay well out of the red, as far as Chapman Valves are concerned. They will not "default" on any service requirement, no matter how tough it may be. Your choice will prove to be soundly bonded.

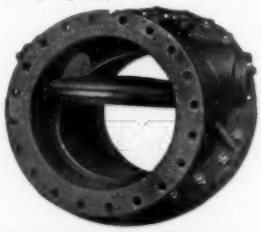
For all Chapman equipment has already been proved in service—on jobs like your own—in waterworks and sewage plants all over the country. Any Chapman product you install can be depended on to stand up, year after year, with nothing more than routine maintenance.

Chapman offers the additional advantage of a single source of supply for all your requirements. Globe, gate and check valves, with fittings, in all sizes. Automatic cone and altitude control valves. Sluice and shear gates, hydrants, brass goods. Foot, flap, and mud valves. Floor stands and all types of operating mechanisms. All engineered to cut costs for *you*. Full information for the asking.



Chapman Compression Fire Hydrants are self-draining, freeze-proof, low in maintenance and self-sealing in case of traffic accidents.

Chapman Floorstands provide a proven modern method of operating gate valves and sluice gates either electrically or manually. Motor-operated floorstands are ideally suited for control of large gates.



Chapman Non-Slam Check Valves close quickly, quietly, and eliminate water hammer. They increase pipe line capacities . . . reduce head loss as much as 75%, and effect substantial power savings.

Chapman List 61 Gate Valves have straight iron bodies . . . heavy hard bronze seat rings and disc faces that can be economically removed and renewed. They exceed A. W. W. A. specifications.

The CHAPMAN VALVE MANUFACTURING COMPANY— *Indian Orchard, Mass.*

Why not remember to mention THE AMERICAN CITY?

Our Municipal Notebook

Is a Small-Town Municipal Plant Profitable?

A MAN recently said: "A petition for a municipal plant is being circulated in our town. I should like to know whether or not we ought to have such a plant. We have a population of about 5,000; a private utility is furnishing first-class service at a base domestic rate of 8 cents. Why should we have a municipal plant?"

The answer of course is: So that the people can be provided with electricity at a lower rate. This is the immediate answer and the one most likely to appeal to the citizen and thus put over the plant.

But what guarantee is there that the rate will actually be lower? A glance at any of the pages 417 to 426 of the 1936 Municipal Index shows a wide variation in the base rates charged by 1,716 municipal electric departments, anywhere from 4 cents to 15 cents per kilowatt-hour. Fortunately, however, existing rates are in general no criterion of what rates can be with a modern plant, however small.

The first logical step is to employ an engineer. Suppose in the instance cited, his report finds that the plant will pay with a base rate of 5 cents per kwh. The town has 1,300 families. The average consumption is 60 kwh per month, giving a bill of $4.80 at 8 cents and $3 at 5 cents, a reduction of $1.80 in the bill.

Is this comparatively small saving worth the "grief" of owning a generating station and distribution system? The householder is likely to say that it is, for things can be done with $1.80, and more things with the $21.60 which is the annual saving. It is a saving of 37½ per cent in a single item of the family budget.

But in addition to the immediate economy, which will influence the voter, there is the always important future. Although there may be few industrial users at present, the availability of cheaper power may attract others. And where there is practically no day load, a most attractive rate can be offered.

Families that have been accustomed to monthly bills of $4.80 and suddenly find themselves paying $3, are likely gradually to increase their consumption to the well-being of themselves and the plant. For if the plant can make a small profit at 5 cents per kwh on 1,000,000 kwh, it will make a little larger surplus at 5 cents on, say, 1,250,000 kwh.

Then there is the possibility of building an entirely new kind of load in the coming years, and sooner or later some system, public or private, is going to show the way. This is an electric domestic heating load. The city of Springfield, Ill., is experimenting with this load, which can be encouraged and developed only under exceedingly low rates. Using water tanks to provide heat storage during the hours 5 P.M. to 11 P.M., all the energy required for heating can be used during the daylight hours. "It has been demonstrated," says Superintendent Willis J. Spaulding, "that properly designed and constructed homes of five to eight rooms can be heated for $100 to $125 per season at City Water, Light and Power rates for off-peak service."

The main thing here to bear in mind is that an electric plant produces a commodity that has not yet more than begun to come into full use. Comparatively few of the private utilities have the foresight and the capital structure that induces the setting of extremely low rates except for extremely large quantities of energy. A municipal plant, by its very nature, can set such rates; because all its debts and costs are available, are comparable to the value of the investment, and normally are diminishing year by year through amortization or paying off the bonds. As a municipally owned utility, the obligation to provide maximum service is superior to the building of a surplus. All costs should be met, but after meeting the costs, the management effort should be applied to materially increasing consumption.

Is a municipal plant profitable? New plants usually are, and old ones can usually be made profitable by building load day and night and applying the additional income to the purchase of modern equipment even if it means revising the type of the plant. Then there is that other aspect of profit—the rendering of more services through fair rates and tactfully teaching the consumers how to make the least drudgery out of them.

Parking Meters in St. Petersburg, Fla.

THE city of St. Petersburg installed, last January 6, 150 parking meters at a cost of $58 each to be paid for from receipts of the meters, with an allowance of $1.25 each for installation. Five months' receipts totaled $5,420.40, an average of $36 each for the five months, or approximately $7 per meter per month. The largest amount received from one meter was $71.30.

Sixty-eight of the meters in the less active locations were discontinued on May 1, the end of the busiest season, leaving 82 meters remaining in operation in the more active locations. From this experience it is estimated that the meters will be entirely paid for by January 1 next.

Operating Cost Low

Maintenance involves a comparatively small charge of, say, $100 annually. It is assumed that the meters with ordinary care will last several years.

The use of slugs is prohibited by fine, but practically no trouble has occurred from this source. Collection of the receipts of the meters required, during the height of the season, the labor of two men four hours every three days, and no additional police supervision was necessary. The accounting for the receipts involved about 2½ hours per day, as the receipts were posted to the credit of each meter in order that the record might be maintained of the operation in that particular location. The increase in the accounting expenses was nominal.

Legal Aspects

As to legal objections, it is understood that test suits were had some time since. The complainants attempted to maintain "pre-emptions of streets for private use and rentals of street space by the city," which suits we are informed were decided in favor of the defendant cities. As to the responsibility of the city in removing parked automobiles having paid for unexpired time, in case of fire, it would appear that the city, not being responsible for the fire but endeavoring to protect the parked car of the owner and to facilitate fire fighting in the interest of the community, would not be liable for any refund to the car owner, but might, if deemed preferable, return the car to the formerly occupied space. No trouble has been had from this source.

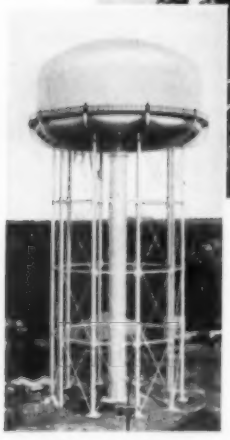
Keeps Vehicles Moving

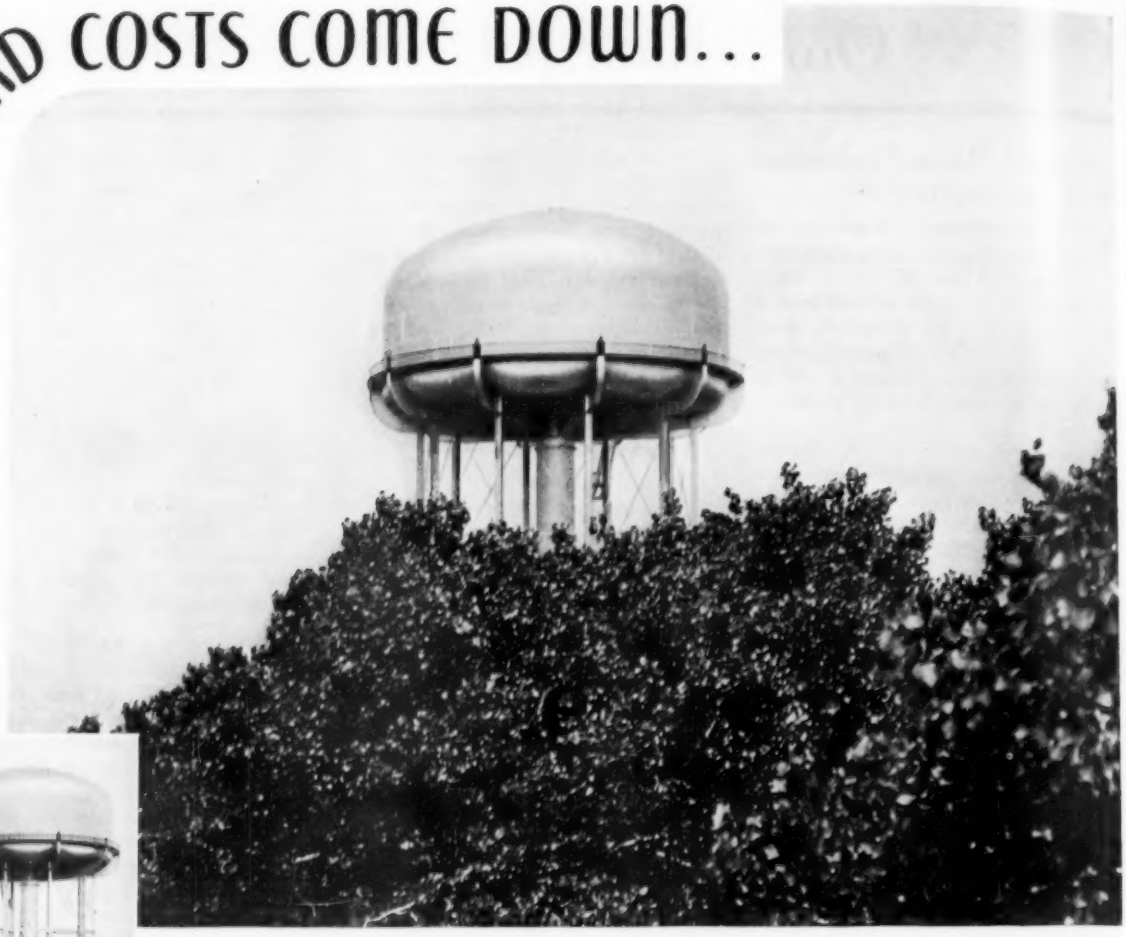
It should be borne in mind that the fundamental idea for parking meters is to keep automobiles moving for the benefit of the abutting property owner and incidentally the city, particularly where the municipality has not sufficient police force to check the cars systematically parking over time. Also, the car owner, having parked and paid for a certain period, is assured of non-disturbance and is easier in mind while occupying the space.

At the time of the original installation there were two objections from merchants, which probably emanated from temperament and misunderstanding. These soon disappeared and applications from other merchants requesting additional installations abutting their places of business were filed. Installation called for alternate meters in congested districts, and it would probably be a mistaken policy to install meters solidly in any district, but this has been done in some communities.

A. F. THOMASSON,
City Manager, St. Petersburg, Fla.

...WATER GOES UP AND COSTS COME DOWN...





Salina, Kansas, Improves Water Supply Service with Adequate Elevated Storage!

WITH power cost averaging only 1¼ cents per kwh., it might seem that the water works department at Salina, Kansas, would have found little to be gained from the installation of the 1,000,000-gallon radial cone bottom elevated tank shown in the accompanying pictures. But such is not the case. On the contrary, Salina, like thousands of other towns, has found that adequate elevated storage is easily worth all it costs even disregarding the usual savings in power.

In the first place, pressure conditions are improved throughout the system. Horton tanks are specially designed so that the entire capacity is available at serviceable pressure. There is only 15 lbs. per sq. in. variation (50 lbs. to 65 lbs.) between top and bottom of tank. The actual average, of course, is even less.

A second advantage is that minimum pumping equipment is required. Peak loads can be carried by surplus drawn from the tank. At Salina, the surplus is sufficient to carry the entire load for over ten hours at the average rate of consumption.

A third important factor is ability to use transmission mains of minimum size. These need only handle average pumpage instead of peak loads.

Another benefit which frequently may be the most important of all is the improved fire protection secured. This, of course, is usually soon reflected in insurance rates.

* * * *

Let us give you the facts about the improvements in service and reductions in pumping costs that can be secured with properly designed elevated storage. Write our nearest office for estimating data.

CHICAGO BRIDGE & IRON WORKS

Chicago.....2127 Old Colony Bldg.
New York.....3308-165 Broadway Bldg.
Cleveland.....2236 Rockefeller Bldg.
Detroit.....1501 Lafayette Bldg.
Phil'adelphia....1616 "1700" Walnut St. Bldg.
Boston.....1501 Consolidated Gas Bldg.
Birmingham.....1502 N. Fiftieth Street
Dallas.....1406 Dallas Athletic Club Bldg.
San Francisco.....1033 Rialto Bldg.
Houston.....2919 Main Street
Tulsa.....1625 Thompson Bldg.
Los Angeles.....1403 Wm. Fox Bldg.

Fabricating plants in CHICAGO, BIRMINGHAM, and GREENVILLE, PA.

Water Department Operation

Motor Vehicles Used by Municipal Utilities

EXTENDING 350 miles north and 270 miles northeast, and covering 450 square miles of territory within the city proper, the municipal water and electric systems of Los Angeles, Calif., require the services of 1,250 motor vehicles. Consisting of heavy-duty trucks, passenger cars and other types, this equipment travels on an average of 1,250,000 miles a month, or 15,000,000 miles a year.

During 1935, the transportation fleet moved 304,537 tons of material from Los Angeles to the Department's two major construction projects—the Boulder power transmission line and the Mono Basin extension.

Despite the fact that Department activities require day and night traveling over the most difficult terrain and under widely varying climatic conditions, traffic accidents are infrequent.

No Faucet Filters Needed in Greenwich

THE Greenwich, Conn., Chamber of Commerce in a recent *Bulletin* backed up the excellent work which its local water company, the Greenwich Water Co., is doing in furnishing a safe, palatable water for domestic consumption. The announcement in the weekly *Bulletin* of the Chamber of Commerce reads:

FILTERED WATER

The completion of the Health Survey brings to mind a solicitation which has been going on in Greenwich for several years past. An out-of town concern, which has been found thoroughly reputable, has been soliciting a number of people in town for the rental or sale of attachments to the cold-water faucets, claiming that these attachments will purify the water. These attachments are quite necessary in some communities where no process of filtration by the Water Company has been provided. In Greenwich, however, the water is aerated, filtered, treated and cleansed, so that added filtration is not necessary.

The Dental Effect of Fluorine in Water

"MOTTLED ENAMEL" is the name usually given to the dental defect which results when children of susceptible age consume water containing from .09 to 1 ppm fluorine. This defect is characterized by dull, chalky-white patches unevenly distributed over the surface of the tooth. In aggravated cases the whole surface of the tooth may present this unglazed appearance, the teeth losing their natural translucency. During the early paper-white stage the imperfection is not especially noted by casual observers. However, as the child grows up, the enamel frequently becomes corroded, and a stain, commonly called brown stain, appears on the teeth, varying in intensity from yellow to almost black. It is unfortunately especially marked on the exterior surfaces of the upper teeth, so it is rather conspicuous. The nature of the structural weakness of these teeth makes a difficult for dentists to put in satisfactory fillings.

There is a social aspect of this problem that cannot be ignored. Young people, their teeth marred by mottled enamel, find it difficult to secure high types of positions. The economic cost of dental care of these defective teeth is also a serious matter to the families of these children. The dental group of Tucson, Ariz., stated that a conservative estimate of dental costs per person afflicted with mottled enamel, who makes the attempt to preserve his teeth, will be approximately $1,000. This will carry them to an average age of thirty years, when they are very apt to lose all their teeth and must resort to artificial substitutes. Aside from any academic considerations, there is a very definite financial loss to the citizens of those communities which have water supplies with a high fluorine content.

In her very helpful paper, "Experience with Fluorine in Water," Jane H. Rider, Director of State Laboratories, University of Arizona, Tucson, Ariz., gives the following conclusions:

1. Water containing from 0.9 to 1 ppm fluorine will cause a dental defect, known as mottled enamel, if consumed by children of susceptible age. For children particularly sensitive it should be below 0.7 ppm.

2. This defect may cost an afflicted individual a large sum for dental care as well as a certain loss of personal prestige.

3. A careful dental survey of all children in the schools must be made in addition to the chemical analysis before a water supply is condemned.

4. When a water contains a toxic amount of fluorine, there is the question, should the individual citizen continue to pay large dentist bills or should the community secure a new water supply?

5. To date no satisfactory, economical methods of removing fluorine from a domestic water supply have been developed.

6. Other sources of fluorine intake into the system should be investigated and further attempts made to determine the origin of fluorine contamination of water.

—From a paper presented before the American Water Works Association.

Officers of the American Water Works Association for 1936-37

At the convention of the Association held in Los Angeles June 8-12, William W. Hurlbut, Water Distribution Engineer, Los Angeles, was elected President, and William W. Brush, Editor of *Water Works Engineering*, New York City, was elected Treasurer. The Acting Secretary of the Association is P. W. Wilson, and the headquarters of the Association are at 29 West 39th Street, New York.

The Useful Life of a Water-Works Structure

THE useful lives of water-works structures are limited in two ways, by obsolescence and by actual deterioration of the structure to the point where it no longer serves its purpose. Obsolescence is encountered less in water-works structures than in almost all other utilities and is practically a negligible factor in affecting useful life. Structures are said to be obsolete when, although they may be in operating condition, their purpose can be better served by a more modern substitute or by the use of a different method.

Deterioration due to age, wear, weathering, chemical and electrolytic action are the factors principally affecting water-works structures. Some materials are inherently long-lived, such as the familiar cast iron pipe, concrete and earth dams, slow-moving pumps and so forth. Others may be made so by proper protection against the attack of destructive elements, such as iron and steel when dipped or painted and given proper maintenance. Climatic conditions due to geographical location are among the most important factors in determining the length of useful service. The effect of freezing temperatures in the north as contrasted with more equable climates in the south is well illustrated by the difference in character of construction practiced in the New England states and along the Pacific Coast.

In the last few years it has been recognized that wood structures are increasingly subject to destruction by termites in a large area of the United States. No native woods are entirely free from the attacks of these insects, and because the first visual warning of their presence is sometimes the collapse of the structure, frequent thorough inspections should be made of wooden structures close to or in contact with the ground. Thorough impregnation with creosote is effective as a protector against the action of termites.

In general, as the result of the combined experience for many years in water utilities located all over the United States, certain average lives have been observed for the various classes of materials, machinery and equipment used in water supply. While these figures should be modified by local conditions and character of material, some of them are recapitulated below:

MATERIALS	LIFE, IN YEARS
Cast iron	100
Steel pipe	25-40
Meters	20-30
Galvanized pipe	20-30
Steam pumps	25-35
Pine flumes	20-25
Redwood flumes	30-40

—From a paper, "The Lives of Water Works Structures," by the late G. A. ELLIOTT, consulting engineer, San Francisco, Calif., presented before the American Water Works Association.

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Sewerage and Sewage Treatment

Sewage Pumping Station Operation in Flint, Mich.

DURING 1935, according to the Annual Report of the Sewage Treatment Plant of Flint, Mich., the pumping station operated satisfactorily and without any major breakdowns. All equipment and machinery was completely repainted, and the color scheme of the machinery was changed from a light-gray to a bottle-green, which brought forth considerable favorable comment from visitors. All the floors were given a coat of battleship-gray paint.

A total of 3,615.29 mg of sewage was pumped, and the average daily pumpage was 9.9 mg, compared to 9.3 mg for 1934. The maximum sewage pumped per month during the year was in April, when 349.53 mg was pumped. The minimum was in February, when 249.77 mg was pumped.

The total power consumption was 920,622 kwh. Of this amount, 990 kwh was generated by the plant diesel engine. An average of 253 kwh per million gallons of sewage pumped, or 5.8 kwh per million gallons foot-head. The oil consumption of the diesel engine was 0.17 gallons per kwh generated. A total of 513 cubic feet of screenings, or 0.14 cubic feet per million gallons of sewage, was removed.

Dolly Used in Laying Sewer Pipe

A PWA crew in Phoenix, Ariz., used a novel method to lay concrete sewer pipe in a narrow trench. A dolly, shown in the illustration, with a wheel at one end of a long wooden handle, made the job easy. The device was passed through the section of pipe to be laid, and the pipe was supported on an arm bolted to the top of the handle, while the wheel was rolled forward inside the pipe, which was already in place, and the joint fitted easily. For larger pipes a higher arm is used.

JOSEPH C. COYLE.

Cleaning Up the Shores of Three States

A TOTAL of 97 new sewerage systems and treatment plants are being constructed at a total cost of $70,350,000 by municipalities and sewerage districts in New York, New Jersey and Connecticut with PWA contributing $46,094,141.

The "purification program" is welcomed by coastal towns which have millions of dollars invested in resort properties and which have been concerned in the past by the flow of partially treated sewage into the ocean. Not infrequently state health authorities have found the bacterial count of water at some beaches to be dangerously high, and have warned against use of these bathing places. Inflammation of eyes and ears, and serious throat ailments, have been traced to the presence of bacilli colon in water contaminated by partly treated sewage. While these bacilli may not be responsible for specific illnesses, they are indicative of the presence of other more dangerous bacteria.

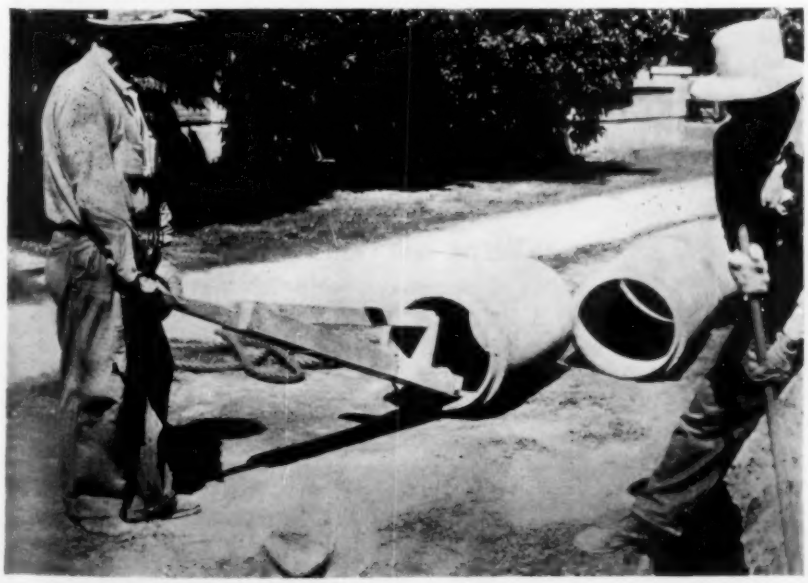
An important economic result in the elimination of pollution in many streams will be the removal of conditions which are inimical to fish life. For example, the threat to shellfish has been so great in some districts that state health officials have shut down oyster-beds because of the danger of infection. In one case, more than 1,000 men, who were thrown out of jobs because of the closing of one bed, returned to their jobs following the construction of the sewage-treatment plant which remedied conditions.

In the New York State program, involving the expenditure of $58,325,000 in the construction of 55 separate projects with PWA loans and grants totaling $39,900,000, the bathing beaches at Coney Island, Brighton and Manhattan and Rockaway Beaches will be among the districts receiving substantial benefits.

Twenty-six sewerage projects are completed, under construction, or will be started shortly as part of PWA's $4,916,000 improvement program in New Jersey. Financed in part by PWA loans and grants totaling $3,930,000, the chain of sewerage projects represents the most important unified step yet taken to eliminate pollution of New Jersey streams and to render its beaches free from infection.

The principal New Jersey stream to be cleaned up is Arthur Kill in Elizabeth. Its tidewaters receive not only the flow from a joint outfall sewer serving twelve communities, but also the sewage from the valleys of the Elizabeth and Rahway Rivers, and a portion of the waste carried back by tidal action from the Raritan River Valley below Perth Amboy.

Demands for adequate treatment of sewage in Connecticut have been less urgent because the state is fortunate in that no public water supply is drawn from streams receiving wastes. This is possible because of the location of Connecticut's principal cities in river valleys, enabling water systems to depend upon pure upland streams for their supply. Yet, to reduce pollution of streams and to improve beaches, sixteen Connecticut cities are constructing more adequate sewers and modern sewage-treatment plants at a cost of $7,111,000, including PWA funds totaling $2,169,000.



DOLLY USED IN LAYING SEWER PIPE IN PHOENIX, ARIZ.

Los Angeles Has Largest Sewered Area

IN addition to its duties of maintaining, cleaning and repairing 2,690 miles of main-line sewers, together with the thousands of appurtenant manholes and flushing structures and 563 miles of storm drains with approximately 21,870 catch-basins and several hundred culverts, the Sewer and Storm Drain Maintenance Division of the Bureau of Engineering, Los Angeles, Calif., operates, on a 24-hour schedule, fifteen sewage pumping plants, one storm water pumping plant and a sewage screening plant and incinerator. Twenty-four city-owned trucks equipped with specialized apparatus and tools are used in the performance of this work, while thirteen foremen, superintendents and operators use their own cars on a mileage basis.

From the standpoint of area served, the sewage-disposal system of Los Angeles is the largest in the United States, and the 55-mile outfall sewer the longest.

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Street Maintenance

Keokuk, Iowa

OUR streets are in fair condition. We use both day labor and relief forces for maintenance. About 75 per cent of the work is done by relief labor. We expect to continue this program in 1936 with WPA aid. Some oil is used for the maintenance of unimproved and macadam streets, and cold patch on service cuts in pavements, with cut-back asphalt and stone mix. Our equipment consists of a blade grader and tractor used on the dirt streets, and the oil is spread with a pressure distributor. The cut-back mix is made in a concrete mixer, hauled to the streets and tamped by hand. The oiled macadam streets are covered with a light coat of sand by hand after oiling. We have a Ford tractor, two Ford trucks, an 8-foot blade, and an oil heater on a trailer, and we rent the distributor.

C. J. NELSON,
City Engineer.

St. Charles, Mo.

OUR streets are in fair condition, owing to our method of asphalt resurfacing, hot patching and seal coating, all of which is done by the regular forces assisted by relief labor. Most of the improved streets are asphalt-surfaced. Only a few hot patches are necessary to maintain these streets, and then usually where a cut has been made for a water, sewer, or gas service.

About every five years a light seal coat is applied, consisting of approximately 1/3-gallon of asphalt to each square yard of surface, with about 25 pounds of torpedo gravel or rock chips for covering.

A large WPA program is anticipated for the coming year. This consists of four storm-sewer jobs, about 2 miles of concrete curb and gutters, and about 100,000 square yards of asphalt streets.

H. D. SMELSER,
City Engineer.

Kingsport, Tenn.

WE have about 20 miles of concrete streets which are in fair condition. We pour cracks and joints with bituminous materials periodically with regular labor. We also have about the same amount of cinder and rock streets on which relief labor was used for ditching, etc., last spring. A total of 3,000 mandays of relief labor was used. Cooperating with the county, we surfaced about 3 miles of our cinder streets with stone crushed by relief labor at a county quarry. During 1936 our routine maintenance with regular forces is contemplated.

OSCAR L. KING,
City Engineer and Director of Public Works.

Eau Claire, Wis.

OUR streets are in only fair condition. We have had no particular program, but use road oil on most of the improved streets, applied by regular city forces. No relief labor has been used on maintenance. In 1936 we expect to do no street work outside of the use of some asphalt oil for regular maintenance.

FRANK GRUBER,
Superintendent of Streets.

Connellsville, Pa.

OUR regular forces keep the streets in fair condition. Most of the maintenance work on the many brick streets has been handled by filling in any uneven places with bituminous mixtures. During the coming year we are going to take advantage of the WPA and expect to surface several of the unimproved streets with bituminous material.

J. E. HOENSHEL,
City Engineer.

Elmira Heights, N. Y.

THIS village has one brick paved street, two concrete paved streets and one macadam street. Asphalt emulsion is used on the remaining streets. There is one street that is not improved. It is planned to grade this street next year. All maintenance work is done by the regular street force.

W. B. TIMBRELL,
Surveyor.

Kalamazoo, Mich.

WE always keep our streets in good condition. Cracks in asphalt pavement are poured with bituminous material, and cuts are repaired with an asphalt mix. Our program for 1936 has not been made up as yet.

E. S. CLARK,
City Engineer.

Morristown, N. J.

WE have managed to keep our streets in good condition, but there is nothing unusual about the methods we have used in the last two or three years. The regular forces are employed on this work with slight help from relief labor. Our plans for 1936 call for the regular maintenance of the pavements, and in addition we have planned to continue the re-setting of stone curbs and flagstone sidewalks through a WPA approved project, which work was started late in 1935 with all indications of proving to be a worthwhile relief job. We will also re-lay cobble gutters and do some storm-sewer work in the same way.

CHARLES K. FETZER,
Engineer.

Lansing, Mich.

OUR streets are generally in very good condition owing to the fact that our maintenance budgets have not been seriously reduced. We have taken some reduction in our budget, of course, but as our streets were in excellent condition before the era of low budgets, we have been able to get by. This work has been done with our regular force.

SAMUEL C. JACKA,
City Engineer.

Riverside, Ill.

THE village streets are maintained to the usual high standard. The maintenance funds have been supplemented by allocations from the state gas tax for use on arterial streets. No relief labor has been used.

We plan a $25,000 construction program for 1936 utilizing gas tax funds and supplemented by a PWA grant. This is in addition to our usual maintenance program.

G. L. OPPER,
Village Manager.

Alhambra, Calif.

WE have 112 miles of streets in the city of Alhambra, only 0.73-mile being without some type of improved surface. There are 4.86 miles of cement concrete, and 32.97 miles of asphaltic concrete, and the remainder is oil macadam. Much of the oil macadam is old and practically worn-out, and should be replaced with permanent pavement. At this time, however, people are either unwilling or unable to pay for new pavement. Cutting the tax rate down to the lowest limit has also cut down the amount appropriated for street maintenance. In 1934 we resurfaced a few streets with light rock and oil, where they were so far gone as to make it impractical to patch, by having the property owners furnish part of the funds, the city furnishing the remainder. We received an amount sufficient to pave two of the major highways, which were state or county roads, from the state and county gas tax funds. The remainder of our street maintenance has been done with municipal taxes. We have used our regular forces, augmented by relief labor to the extent of perhaps 50 per cent. Last year we paved about 2 miles of street with 6-inch asphaltic concrete surface.

In our plans for 1936 we expect to obtain help again from the state and county gas tax funds, and also expect some WPA labor. We hope to surface about 2 miles this year with 6-inch asphaltic concrete.

CLAYTON W. PAIGE,
City Engineer and Street Superintendent.

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South Bend Safety Week

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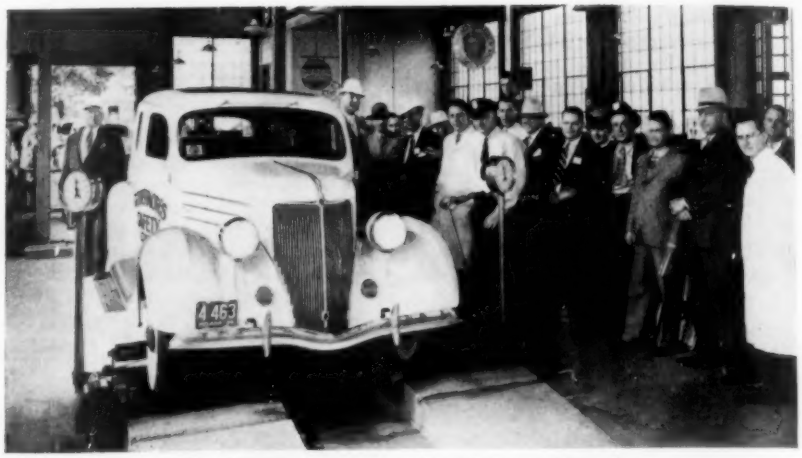

The Governor's own car takes its turn, down the Safety Lane, during "South Bend Safety Week."

CELEBRATING "South Bend Safety Week," the South Bend Police Department conducted a spectacular five-day Free Car-Testing Clinic. Hour after hour—day after day—the stream of cars passed swiftly through the efficient Safety Lane, fully equipped with famous Bendix Civic Safety Clinic equipment. A car a minute during "peak" periods—30 cars an hour average for the whole five days! Brakes tested for perfect balance! Steering tested for play, for caster, camber, toe-in, knuckle and king-pin adjustment! Lights, horn, mirror, windshield cleaner—all checked and condition accurately recorded! Nothing equals the precision and rapidity of this great line of apparatus. That's why most car manufacturers use Bendix equipment for final inspection. That's why city after city joins the march for Safer Streets!

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Public Safety

Recent Radio Rulings of F.C.C.

AT a session of the telegraph division of the Federal Communications Commission on May 19, certain amendments to regulations were adopted.

The maximum power to be assigned for the use of municipal police stations will be based on the latest official population figures of the Department of Commerce for the area to be served, in accordance with the following table:

Population	Power, Watts
Under 100,000	50
100,000 to 200,000	100
200,000 to 300,000	150
300,000 to 400,000	200
400,000 to 500,000	250
500,000 to 600,000	300
600,000 to 700,000	400
Over 700,000	500

In the event that the amount of power allocated above is insufficient, the Commission may authorize the use of additional stations of the same or less power, or such additional power as may be necessary, but not to exceed 500 watts.

The maximum power assigned for the use of inter-zone and zone police stations is 500 watts; for state police stations, it is 5,000 watts during the period from sunrise to sunset, and 1,000 watts from sunset to sunrise.

An application for an authorization for a municipal police station to serve two or more municipalities shall be supported by sworn copies of agreements made between the proposed licensee and the contiguous municipalities. Such agreements shall show that the applicant is required to furnish emergency police radio service to the contiguous municipalities and that the contiguous municipalities agree to accept such service and not to request individual authority to operate municipal police radio transmitting stations.

State and municipal police stations, although licensed primarily for communication with mobile police units, may transmit emergency messages to other mobile units such as fire-department vehicles, private ambulances and repair units of public utilities, in those cases which require cooperation or coordination with police activities.

Training Traffic Officers

THE Harvard University Bureau for Street Traffic Research and the International Association of Chiefs of Police are offering the New England Traffic Officers' Training School at Harvard University. The course will extend from August 17 to 29, inclusive. Apply to Bureau for Street Traffic Research, Widener Library—Room P, Harvard University, Cambridge, Mass.

Accidents Can Be Reduced

DURING the last five years fatalities in New York City have been steadily declining, from 1,163 in 1930, to 1,116 in 1931, 1,031 in 1932, 1,037 in 1933, 1,026 in 1934, to 954 in 1935. New York City is now next to Milwaukee in safety. Undoubtedly one of the reasons for this improvement lies in the diversion of vehicles from congested areas. In Manhattan a large part of this accomplishment may be credited to the West Side Elevated Highway, first opened to traffic in 1929 and now carrying 35,000 vehicles per day which otherwise would be on the main avenues of Manhattan. Since opening it, access to the highway has been rendered successively more convenient, with consequent steady deflection of traffic away from the north-and-south arteries. John Gibala, of the Police Department, Chief Engineer's office, estimates the value of the saving in time made possible by this highway at more than $1,000,000 per year. In the borough of Queens, the Grand Central Parkway typifies the means of traffic diversion. Opened in 1934, it carries some 15,000 vehicles per day. Next will come the East River Parkway in Manhattan and the Triborough Bridge with its parkways to and away. Hence, there should be further reductions in accidents by proper highway design.

Another deterrent has been the enthusiastic inter-precinct competition within the Police Department, inaugurated by Deputy Commissioner Fowler in June, 1934. The idea is to stop accidents, let alone deaths, in your precinct. The 83 patrol precincts compete among themselves; the 4 traffic districts among themselves; the 4 motorcycle divisions among themselves. Plaques are awarded each year to the precincts, districts and divisions with the best records.

Another factor tending to decrease accidents is the policy of signalizing, as money permits, the intersections in the vicinity of one that is already equipped. The spot map shows that these intersections leading to and following a signalized intersection are likely to have unfavorable records. The theory is that a driver seeing a green light some blocks ahead, will attempt to make it; while the driver who has made it, is likely to relax with too little thought to drivers who are to cross his path and are not guided by any lights.

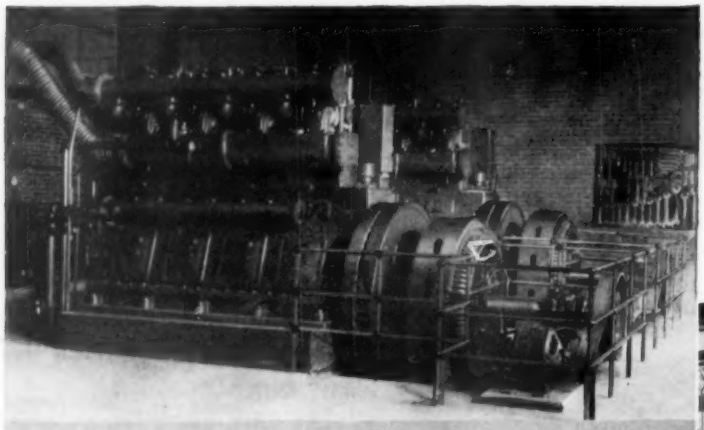
Fires Can Happen Any Time

EVERYBODY knows that a city-wide fire is possible in almost any community and that few fire departments are equipped to combat one. Because they are a long shot, the normal attitude is to bet that they won't happen. There is, however, one especially unpredictable fire hazard which no measures except the provision of sufficient personnel and equipment can cope with. This hazard is the pyromaniac, and an example appears to be in the city of Haverstraw, N. Y., where there seems to be a monthly outbreak of incendiarism. The destruction has included barns, garages, the High School, worth $150,000, and on April 2 the Capitol Theatre, damaged to the amount of $85,000. This is a hazard even more menacing than ordinary conflagrations. A little too much derangement in one of many minds can start the damage any time—and then it's up to the fire department.

An Object Lesson

Whenever a tragic accident occurs, the Racine, Wis., Safety Council, as part of the city's safety drive, places the remains of the vehicle in Monument Square

For EVERY MUNICIPAL POWER SERVICE



POWER GENERATION

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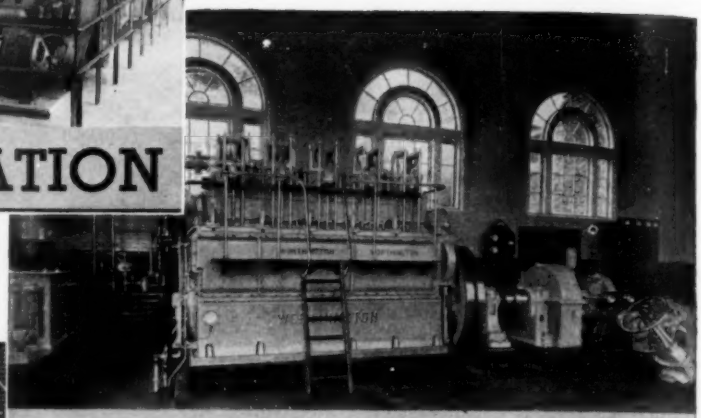
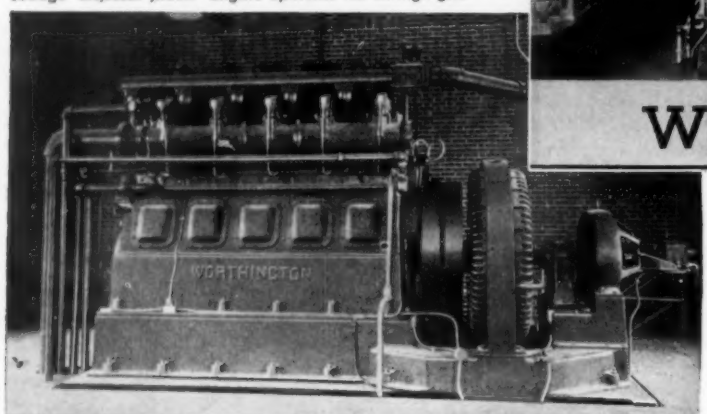


WATER SUPPLY

250-hp. Worthington Diesel Engine driving Worthington Centrifugal Water Works Pump

300-hp. Worthington Gas Engine driving generator in sewage disposal plant. Engine operates on sewage gas



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JULY, 1936

Vol. LI, No. 7

The American City

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Selling Municipal Government

By CHARLES STANTON
Mayor of Rochester, N. Y.

THERE are, as I see it, at least two principal elements in the present-day situation which make it advisable to promote a fuller understanding on the part of the people of their local government. The first of these I would describe as an uninterested citizenry. The second is the greatly increased complexity of modern city government as compared with what formerly existed. In view of these difficulties, it should be our aim to stimulate a widespread, intelligent interest in what is going on at the City Hall and to supply an accurate and common-sense picture of the value of the services which the public receive in return for their tax dollars.

In conducting our campaign, the newspaper commands our foremost consideration. That the press regards City Hall news of real value is evidenced by the fact that special reporters are usually assigned to that work. It is highly desirable, however, that publicity, whether it be for newspaper or any other kind of use, be properly supervised and edited so that statements, statistics, or any other kind of news regarding municipal activities, may be thoroughly authentic and properly expressed in understandable language and made public at the right time. The lack of such direction may result in premature announcements and inaccuracies of one sort or another which later have to be corrected to the disadvantage of the administration. Naturally, the answer to this problem is that a central reporting agency be set up for the particular purpose of preparing and releasing reliable information as to City Hall happenings and municipal activities in general. This work should be in the hands of a person experienced in city affairs, having an intimate knowledge of the various branches of the city government, and possessing a good sense of publicity values, so that the everyday activities may be interpreted to the people in terms which are easily understandable and which will serve to give a true picture of daily events as they happen, or of plans for the future that may be in the making.

Reports and Exhibits

Second of importance in a general scheme for publicizing municipal activities would be, in my opinion, the annual published reports. In most cases these little volumes describe the functions of each department, the number of employees it contains, and a record of what it has accomplished during the preceding year, with some statistics showing comparison with previous years. When illustrated with photographs and easily readable charts, as are most of them, these yearly reports provide the average citizen with a definite knowledge of the various services the city is regularly rendering.

A comparatively recent innovation is the so-called "Know Your City Government Days." In Rochester we have now had two of these demonstrations, which were remarkably successful in that several thousand interested citizens visited City Hall and other public offices and evidenced a rather unusual interest in the functions of the various departments. The heads and officials of the departments not only assisted wholeheartedly in making the arrangements for these two days when city government was on parade, but also were present in their offices most of the time to greet visitors and answer any questions and give any explanations which were requested of them. The desirability of this plan lies in bringing about a personal contact between a large group of citizens and a number of city officials. The result usually is a better understanding on the part of the public of the problems which confront the officials, and a greater appreciation on the part of the officials of the viewpoint of the average taxpayer.

Personal Contacts and Radio

While speaking of personal contacts, mention should be made of another important means whereby city officials may meet groups of people and discuss at first hand the various phases of the activities and functions of their local government. I refer to appearances before civic groups, such as luncheon groups, women's organizations of various kinds, church societies, and many other associations of one kind or another. Invitations from such groups are fairly frequent and they offer an excellent opportunity to acquaint quite substantial audiences with facts concerning various phases of the city's business.

The radio is another and very effective means of establishing a contact between City Hall and the people in their homes. There are a number of occasions when this type of publicity serves a very useful purpose in that it undoubtedly reaches a number of people who do not ordinarily read the papers or, at least, if they do, they stop at the headlines. An explanation of the annual budget, when it is brought out each year, is an excellent illustration of what I have in mind in this connection. Then again, periodical reports on the condition of the city as a whole can be made in the form of community fireside talks. It is my experience that these occasional reports are welcomed by the people and contribute substantially to their interest in municipal affairs.

I might add on the subject of radio publicity that a local newspaper of Rochester has unofficially sponsored a local "Town Hall" program which involves discussion of topics, sometimes purely local in character, of general interest to a large portion of the people.

In conclusion, a few other means of publicity can be mentioned, such as explanatory pamphlets accompanying tax bills, or local movies illustrating municipal services. Through all these mediums of expression the municipalities can display their wares and secure a proper comprehension on the part of the public of the worthwhileness of a modern, progressive city government.

—From an address delivered at the Conference of Mayors and Other Municipal Officials of the State of New York, Kingston, N. Y., June, 1936.

PUBLIC WORKS ACTIVITIES IN LOWER MERION TOWNSHIP, PA.

1. Laying a 2-inch cold-mix asphaltic concrete wearing surface in Ardmore, Pa. 2. The ash and trash collection equipment standing in front of the township offices. 3. Road widening with Federal relief forces under township supervision

Highway Services in a Community of 40,000 Population

By W. E. ROSENGARTEN
Township Engineer, Lower Merion Township, Ardmore, Pa.

IMMEDIATELY to the west of Philadelphia lies a most interesting community. Through it William Penn projected several main arteries of travel to the unknown country beyond. These still bear the old milestones indicating on the face the miles to Philadelphia, and on the rear the coat of arms of the early Quaker. In 1777, George Washington crossed the section with the Continental army on its march to Valley Forge, but 10 miles beyond. Through the area in 1832 was built the old Columbia Railroad, and today many of the old stone ties may be seen gracing the driveway entrances to fine mansions. Today the main line of the Pennsylvania Railroad to the west crosses this section, known far and wide as a fine community of homes. In 1785, the area was separated from Philadelphia and became a part of Montgomery County. In 1900, it became a township of the first class, and it is now governed by a board of thirteen commissioners.

Gradually the area has developed from 13,271 people in 1900 to 40,000 today. The assessed value of the community is $86,000,000. The township borders the west bank of the Schuylkill River for a distance of 7 miles and contains an area of 25 square miles. It comprises the communities known as Bala, Cynwyd, Merion, Wynnewood, Overbrook Hills, West Manayunk, Ardmore, Haverford, Bryn Mawr, Rosemont and Merion Square.

The Highway System

The area is served by a system of 172 miles of highway, 94 per cent of which is paved. The jurisdiction and extent of paving of these roads is indicated in the accompanying tabulation:

JURISDICTION AND IMPROVEMENT OF HIGHWAYS

Type	Township Miles	State Miles	County Miles	Total
Mixed asphalt	57.42	12.12	5.08	74.62
Concrete	3.18	3.56		6.74
Brick	.35			.35
Penetration macadam	48.57	4.45		53.02
Surface-treated macadam	13.47	11.26		24.73
Stone macadam	1.55			1.55
Earth	10.29			10.29
Telford	.17			.17
Belgium block	.09			.09
Totals	135.09	31.39	5.08	171.56

Maintenance Organization

The township employs six gangs, each consisting of a foreman, a truck and from four to ten men, who are engaged in the maintenance of the township system of highways. Each gang has assigned to it a section of the township and is held primarily responsible for the condition of the roads in that area. Certain of the gangs have been specially trained and are used in some of the major types of work. As an example, one gang replaces all street openings, another is used when an asphaltic concrete surfacing is to be laid, and still another is used when a penetration macadam job is to be done. Practically all the time of one gang is engaged in street cleaning and trash collection.

Patching

Permits are required for all work within the public rights-of-way, for which a charge of $1 is made. If road paving is cut, the backfill and old paving are replaced under inspection. The party making the opening is required to maintain the patch for several weeks, until settlement has taken place. The final paving is then placed by the township, for which a charge of $9 per square yard is made. This charge may seem high, but it is purposely so to discourage opening the paving unless absolutely necessary. Small openings cost this amount to replace, while larger ones can be repaved for less. In 1935, there were 398 permits issued for which $4,185.74 was charged.

The patching of holes due to wear and weather requires a comparatively small portion of the time of the maintenance forces, because for many years it has been the policy to construct a substantial type of road surface. The standard construction at present consists of a 6-inch broken stone base, surfaced with a 4-inch course of penetration macadam or 2 inches of penetrated cushion course and 2 inches of asphaltic concrete wearing course. A 7-inch portland cement concrete base surfaced with 2 inches of asphaltic concrete is also used. The advantage of this substantial construction is especially appreciated in the spring months, when the frost is coming out of the ground and roads are breaking up and requiring extensive maintenance to keep them in a safe condition.

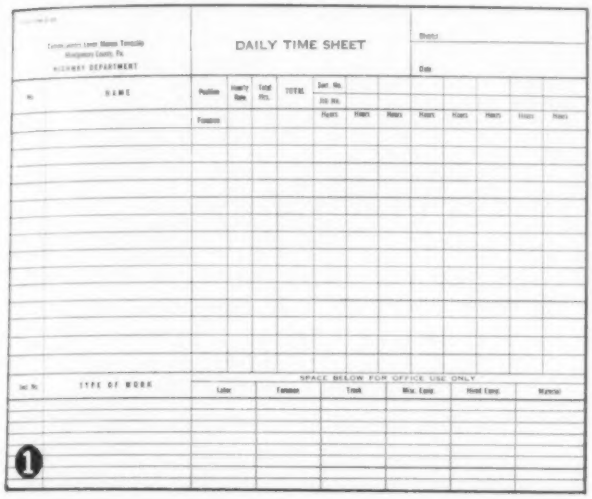
Plant-mix asphaltic concrete using cutback asphalt is stored in the township yard and used for patching. Several asphalt plants operate in the vicinity, and we are fortunate in being able to obtain material at almost any time except during the winter months. At that time material is prepared by mixing in the yard by hand or with a one-bag mixer, using materials similar to the plant mixtures.

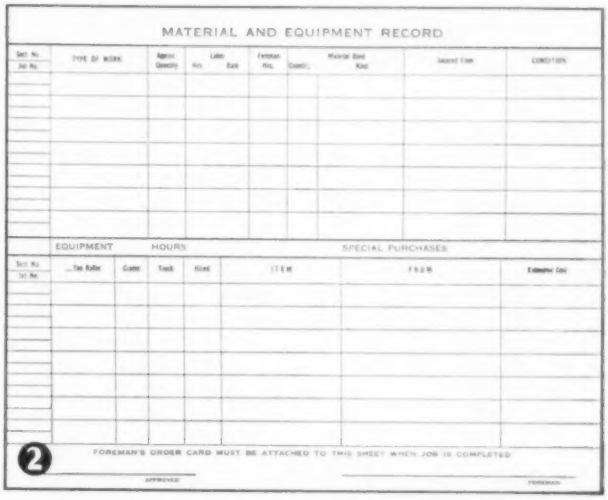
Equipment

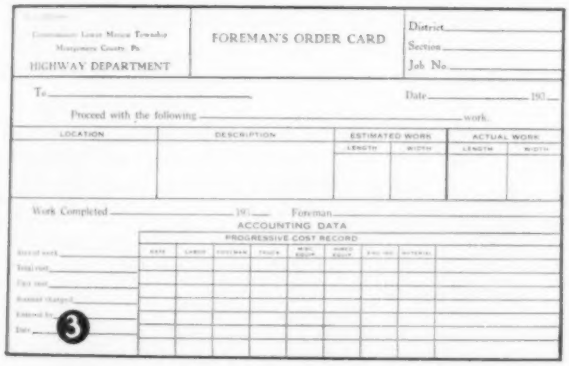
The Department is well equipped to carry on necessary maintenance work and also new construction. The principal machinery, in addition to small tools, consists of the following:

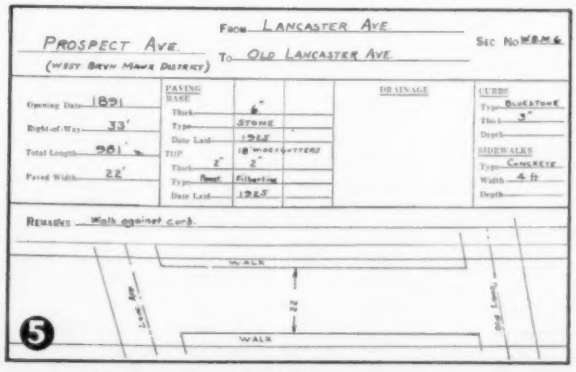
9 2½-ton Autocars
3 2½-ton GMC trucks
1 Dandie 1-bag concrete mixer
1 Lakewood 1-bag concrete mixer
1 Jaeger 1-bag concrete mixer
4 Passenger cars
12 Good Roads Co. snow-plows
2 Kelly-Springfield steam rollers
1 Kelly-Springfield gasoline roller
1 Austin grader
2 Centrifugal (Jaeger & Gorman-Rupp) pumps
1 Ingersoll-Rand compressor and tools
2 Heating kettles
1 Elgin motor pick-up sweeper
1 Austin Western motor sweeper

In the past year the Commissioners have completed the construction of a modern garage and material storage outfit. It is probably the best and most modern plant in this









FORMS USED IN FIELD AND OFFICE ACCOUNTING IN LOWER MERION TOWNSHIP, PA.

1. The road foreman's daily report, measuring 8½ x 7 inches. 2. Reverse side of foreman's report, showing material and equipment used. 3. The foreman's order card, measuring 8 x 5 inches. 4. Reverse of order card, showing distribution of material, labor and equipment. 5. The office record of maintenance costs of pavement, measuring 8 x 5 inches. 6. Reverse of the maintenance cost record, showing actual costs

section of the country. There are 24 individual garages opening into a central court, where there is an office with gasoline and oil supply and greasing rack. The gasoline storage consists of a 10,000-gallon tank buried beneath the paving. There is an insulated cement storage house for 1,000 bags, a tool-house where a supply of picks, shovels, lamps, nails, etc., is kept. This is equipped with drill and forge for minor repairs and sharpening tools. The total cost of the plant was $59,093.

Minor Improvements

Much of the work of the maintenance forces consists in making minor repairs and changes to improve traveling conditions or to eliminate points of danger along the roads. These include the placing of wood post and cable guard-rail at points where needed, cutting back sharp turns along the roads, excavating embankments, especially at road intersections to extend sight distances, replacing sharp corners with 6-inch cut granite, curved curbs of radii of 15 to 30 feet and replacing old storm drain pipes with others of adequate size.

Federal Relief Employment

Approximately half of the funds available for road and drain construction have been utilized to carry the local portion of numerous Federal relief employment projects. There are at present 350 men employed on 10 projects. These include the laying of 18- to 42-inch storm drains, construction of masonry retaining walls along a stream, a box culvert with masonry headwalls, road grading and the construction of rubble gutters. Progress has been slow, especially during the winter months, owing to the fact that only four work days per week are recognized. The total cost of the jobs so constructed is about double the cost when built by township forces or by contract. The net cost to the township, however, is about 75 per cent of the usual cost of such work.

Trash Collection

Ashes and trash are collected by township gangs once every two weeks from all except a few outlying homes. The material is collected from containers placed near the rear line of the house, but visible from the street. The township is divided into eight districts, each requiring a day to cover. Collections are made on Tuesday, Wednesday, Thursday and Friday. Saturday and Monday give an opportunity to catch up to schedule in case of bad weather or holidays, or permit the gangs to do necessary patching of roads in its district. Three township trucks are used regularly in this collection service. When ashes are heavy in the winter months, additional township or hired trucks are used.

A total of 4,807 tons of ash and 4,038 tons of trash was collected during the past year, at a cost of $26,213, or $2.96 per ton.

Street Cleaning

Practically all the streets which are paved and curbed are swept regularly. The residential streets are covered once in two weeks in conjunction with the trash collection, while certain of the business streets are covered as frequently as four times per week. A total of 79.19 miles of road is swept. The motor pick-up sweeper operates generally from 5 A.M. to 1 P.M. The cost of this service in 1935 was $7,061.27, which included the operation and depreciation of the sweeper, as well as the gang required to pick up and haul the sweeper collections to the dump. A total of 5,372 miles of gutter was swept, at $1.31 per gutter-mile.

Snow Removal

A function of the Highway Department which has developed in recent years is the keeping of streets and roads open to traffic throughout the winter season. New 2½-ton trucks equipped with snow-plows purchased in the past few years have provided equipment capable of keeping all roads open. Increased preventive measures have also been taken, through the purchase and erection of additional snow-fences. These have been particularly effective on the open sections of road where travel is the lightest. During the past winter all roads, with but one exception, were kept open to travel at all times. The only road closed was at an outlying point, and it was but a few hours before it was again in service. A total of about $10,000 per year is expended on this service.

Detail records are kept of all items of expenditure. Foremen report daily the labor, equipment, and materials employed on the improvement of each section of road. The entire highway system is divided into 600 sections. Each section is indexed on cards, on which is recorded such information as length, width of right-of-way and paving, type of improvement and annual maintenance expenditure.

Township Expenditures

A discussion of Lower Merion Township would not be complete without reference to its financial condition. Although it has an excellent system of roads, sewers and other improvements, it is practically without debt. The bonds outstanding total only $190,000, and there is cash in the sinking-fund to redeem them, but unfortunately they are not callable. The township tax rate is but 8 mills, or 65 per cent of the 1929 rate. It is of interest that the slice which must be set aside in most municipal budgets for debt service, usually large, is in this case very small. This is evidence of a community of ideal size run in a business way. A smaller community would not justify an organization of specialists, while a larger community loses that personal interest between citizen and public official which is essential.

Private Business Stimulated by PWA in Alta Vista

STRIKING indications of the successful stimulation to private business which derives from even relatively small Public Works Administration projects are seen in the present situation at Alta Vista, Virginia. H. M. Lane, president of the Alta Vista Housing Corporation, which erected the first limited dividend housing project to be financed with PWA funds, has just reported on conditions there to Administrator Harold L. Ickes in Washington.

The complete change in the industrial situation is credited in part by the citizens of Alta Vista to the impetus furnished by the original advance from the Public Works Administration. This amounted to $84,000, loaned to finance much of the construction of 50 houses for families of low income. Private owners followed suit, repairing and remodeling their properties. Many new houses were completed by private initiative, and more are now under construction.

As a result, the little town is booming. Its population has grown from 2,460 to 4,500. A large chain department store has opened up its own new building, three new grocery chains are now represented, and five modern super-service filling stations have been erected. The local theater has been doubled in size at a cost of $35,000. Finally a new grade and high school addition, valued at $50,000, has just been completed with the aid of PWA money.

Ponca City Replaces Wells with New Surface Supply

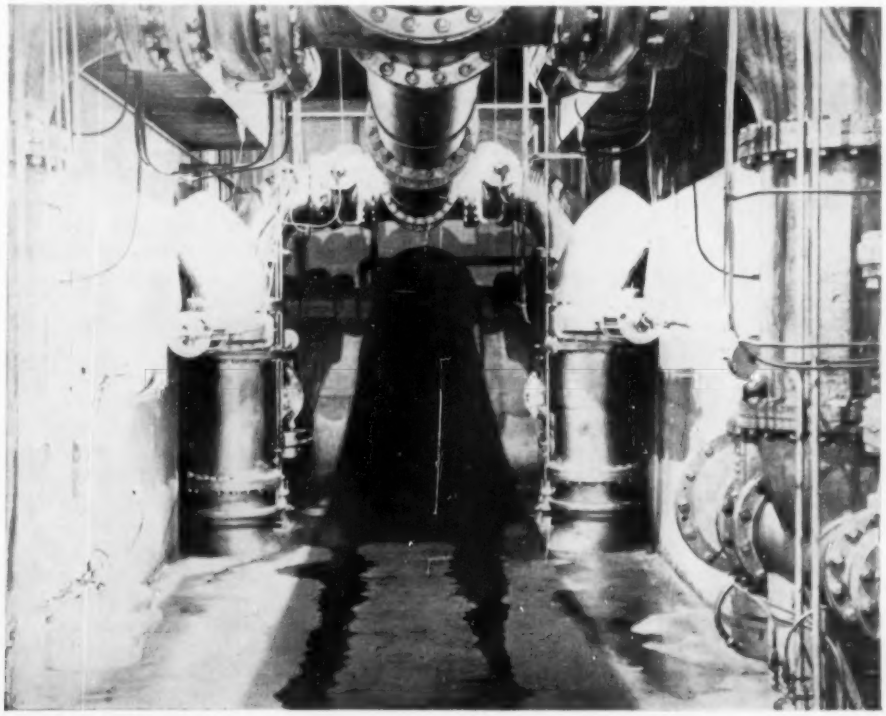
PWA Project Will Also Supply Large Industrial Consumer

THE city of Ponca City, Okla., has taken its water supply from wells in the valley of the Arkansas River for many years. The water from these wells has become harder and more salty each year, and when the opportunity for a new supply arose, through a Public Works Administration loan and grant of $560,000, the city turned to surface water as a supply that would be soft, clear, and palatable.

A short distance out of the city, Turkey Creek drains an area large enough to furnish the desired quantity of water, but on this creek there was not sufficient storage area. Just over a low ridge from Turkey Creek, however, flowed Little Turkey, draining a small area but providing a location for a big storage basin. The combined drainage area of the two streams is 33 square miles. A plan was drawn for two dams with one intake and the lakes behind these dams were connected by a shallow, broad canal. The new road over the top of the two dams crosses the canal by a bridge and passes between the twin lakes to join the old road at the head of the valley. Lake Ponca has already become a scenic attraction for northern Oklahoma and southern Kansas.

The Twin Dams

At the west end of the Turkey Creek dam lay thick ledges of limestone which provided a natural spillway, 250



THE PIPE GALLERY OF THE PONCA CITY FILTER PLANT

feet wide. The limestone excavated from the spillway was used for riprap on the upstream face of the dams and for guard-rails along the sides of the roadway on top of the dams. The dams contain 500,000 cubic yards of earth excavated from the reservoir sites upstream from the dams. The earth was spread by bulldozers, wetted, and compacted with sheep-foot rollers.

These combined reservoirs, having an area of 800 acres, will store 4½ billion gallons and will deliver 8 million gallons of water a day. The water can be drawn off at three different levels through 24-inch gate-valves in the concrete intake tower behind the Turkey Creek dam. The impounded water is screened on the outside of the tower by conical galvanized screens, dropped over frames and operated from the platform of the tower. From the intake tower a 48-inch concrete conduit leads under the dam, and from this a 27-inch welded steel pipe line, furnished by the Taylor Forge and Pipe Works, of Chicago, carries the water to the existing pumping station.

Filtration Plant

Adjacent to the pump station was built a modern 8-million-gallon rapid sand filtration plant. The water will be coagulated with ferrous chloride and lime, or alum and lime. The ferrous chloride will be generated at the plant by passing liquid chlorine through iron filings. The water can also be treated with powdered carbon and with ammonia and chlorine. The water passes first through a preliminary mixer, where it is mixed with the lime; then through duplicate mixing chambers equipped with Dorrco flocculators. From the mixing chambers the water flows through parallel coagulation basins, each having a six-hour detention period. The coagulated water is conducted in an open flume built into the basin wall to a point immediately opposite the head house. An underground 48-inch steel pipe takes the water to the filtered-water conduit in the building. After passing through the filters, the water flows into the clear well beneath the filters. This clear well is connected to a 2-million-gallon reinforced concrete covered storage tank already existing at the plant.

Before financing this plant, the city contracted to supply the Continental Oil Refinery with 2,500,000 gallons of water per day. As a part of this project, 6,000 feet of 12-inch steel force main, manufactured by the American Rolling Mill Co., was laid from the new filter plant to a connection with the refinery supply line, and a 300-hp motor-driven centrifugal pump was installed in the basement of the head house. Provision was also made for moving the four motor-driven pumps from the present station into the basement of the head house so that the combined operation of the filter plant and the pump station will be under one roof.

The attractive modernistic building was designed by John Duncan Forsyth, architect, of Tulsa. W. R. Holway, consulting engineer, of Tulsa, prepared the plans and supervised construction for the whole project. Photographs used to illustrate this article are by Donal K. Holway.

Present Assessment Difficulties, and Suggestions for Reform

THE latest Special Report (No. 10) of the State Tax Commission of New York* is not a purely local document, but analyzes real property assessment in each of the 48 states. The pictures of the whole indicates certain definite trends throughout the country. Evidence on these prevailing conditions is gathered under five main heads: (a) complete escape of property from the tax rolls; (b) rigidity, i.e., the failure of assessments to "adjust" to changes in actual values; (c) inequality as amongst average assessment ratios of various kinds —rural-urban, inter-district, inter-class, land-improvement, resident and non-resident owned; (d) regressivity; (e) inequality as amongst individual properties.

Actual evidence that some real property is escaping entirely from the tax rolls has been revealed in only a few states, but it is inferred that this condition is pretty widespread. Tax maps made recently in Connecticut by aerial photography show a great deal of property enjoying complete exemption at the expense of the rest of the taxpayers.

The fact that the real property tax, as administered at present, appears to be a regressive tax is worthy of note. In a few states the trend is not very marked, but in the vast majority of tests there was a definite and pronounced tendency for the average assessment ratio to decline as the value of the property increased, thus placing a disproportionate burden on the smaller property owners.

There is one important trend in modern real estate assessment to which Mr. Silverherz seems to have given inadequate consideration. He mentions as two of the basic components of modern systems of assessment a system of unit valuation for land and a system of unit valuation for buildings, but in his survey of the 48 states he has made no note of the progress of this separation of valuations of land and improvements which is so essential to any scientific assessment technique.

After analyzing the trends in the various states, Mr. Silverherz considers some proposals for reform. State equalization and local equalization have both been suggested. In some cases state equalization has reached a high degree of technical excellence, but at its best it deals with averages and does not reach the central problem of individual inequality. Local equalization has made no worth-while progress, in the opinion of Mr. Silverherz, who feels that any attempt to improve it would be an assumption of the impossibility of good initial assessing and a patchwork adjustment to this assumption. The problem is deeper, and patchwork keeps us from the real effective methods of reform. Then there are the indirect methods of achieving this equalization such as conditioning all state aid upon full-value assessments. But such rulings are apt to be treacherous and impracticable.

What is at the root of our problem is lagging adjustment, says Mr. Silverherz. To induce our small communities to carry out a modern system of assessment—providing for: (1) tax maps; (2) a system of unit valuation for land; (3) a system of unit valuation for buildings; (4) a system of compiling and analyzing indices of value—is out of the question. Such an overhead expense is quite out of their range. Our local governments are impossible units of administration under modern conditions. The states are ahead of small localities by reason of the fact that they have had to face that important spur to division of labor and specialization—the problem of large-scale operations—and the localities have not. Therefore, the remedy which expert opinion recognizes as the most commendable for present assessment ills is the modernization of the structure of local government and the technicalization of its administration.

* "The Assessment of Real Property in the United States," by Joseph D. Silverherz. See page 101, this issue of THE AMERICAN CITY

The Modern Motor-Bus

THE motor-bus is the vehicle whose competition, along with that of taxicabs and the private automobile, has forced the development of the trolley coach and the complete metamorphosis of the street car because:

1. Investment is much lower for buses.
2. Capital turnover is more rapid.
3. Flexible routing is possible. Buses can be placed and schedules adjusted to fit the value of patronage.

City officials already recognize that there is a steady transmutation of transit earning power into the form of buses. In the course of prosaic events, this change-over is of minor interest to any one except the operators, investors and manufacturers. It is chiefly when the bus line is put forward as a successor to an electric system that municipal officials, local newspapers and the public make the proposition a controversy. But whether the bus system is broached by the existing transit company or by a new concern or is proposed by the city, the matter of a franchise will be reached in due course everywhere.

Franchise and Quality Service

In granting a franchise for a bus line, whether new or a substitute for other service, both the city officials and the riding public are, strictly speaking, concerned only with the adequacy of the service—which means the character and safety of the vehicles, their frequency and possibly their operation on known schedules, and the fare.

These considerations can be summed up in the character of the operator. If he is conscientious, capable, progressive, he will of necessity endeavor to give the town the type of service which will pay the largest gross income. Indeed, if requested to name another matter of official and public concern, it would be the desirability that the franchise owner should make money from the operation of his buses. A concern that can pay its expenses, including its debt obligations, is a real asset to a community. Such a concern, if its money comes from wise operation, will be keenly interested in the steady improvement of its service. This attitude is important, because the improvement in buses is going forward at an unprecedented rate.

It is emphasized in certain quarters that "the experienced, established transportation companies in each community are far better qualified than any one else to decide the types of vehicles which should be used."

As between trolley coaches and street cars or even as between trolley coaches and buses, the foregoing is to an important extent true. But as between large buses and small buses or expensive buses and cheap buses, the decision of the company should be checked by the desires, beliefs and especially the facts of the municipal officials.

This is true not only in the case of a new bus line or system, but in the case of existing buses as well. Manufacturers state that buses are being improved at such a rate that they are obsolete in five years. The operator points out of his window at buses that are nine or more years old and asks why he should retire them. He says they are carrying passengers and he cannot afford to replace them until they cease to perform that function economically. The city official's place is with a pair of scales between these two points of view.

When Is a Bus Old?

In the early stages of bus development, roughly the period prior to about 1925, bus obsolescence was determined largely by mechanical deterioration. Buses could be economically operated almost until they fell to pieces, because there were no substantial improvements being made in the operating or riding characteristics of the newer vehicle. This situation has gradually reversed itself, and at the present time obsolescence is measured largely by the mechanical improvement of successive models.

At present, the time to replace a bus is when the savings in operating cost plus the increase in revenue due to greater rider appeal of the new models warrants buying the new and discarding the old. Franchises prepared so

Photograph by courtesy of the White Motor Co.

ONE OF CLEVELAND'S 40 NEW 12-CYLINDER BUSES

as reasonably to assure the prudent operator of sufficient net income to enable him to take advantage of technological improvements through more frequent replacement of equipment, will in the end return the greatest benefit to the municipality. In short, the franchise most favorable to the operator, within limits, will be most favorable to the municipality.

What the New Buses Have

Improvements in the design of city buses in the past five years have been notable, and there is every indication that this trend will be continued, at least in the immediate future. The most radical change has been in the appearance of the vehicle, which to the casual observer results only in more pleasing lines, but which from a technical standpoint has considerably improved operating characteristics and riding comforts. This has resulted from the elimination of the front engine under the conventional hood and its removal to the rear of the vehicle or under the floor between the axles. This is what is known as the "transit type" or "metropolitan type" bus, simulating in appearance the newer street cars. The more scientific distribution of weight in these buses gives superior riding qualities, and makes possible better entrance and exit door locations, decreasing boarding and alighting time. It has also increased the seating capacity of buses of comparable dimensions, and allowed greater spacing longitudinally between seats, which makes for greater passenger comfort.

Lower floor levels and shorter steps have also been made possible by this change, so that passengers may board and alight with greater safety and in less time than previously.

Lighting systems have been developed in the past two years so that the light intensity at the reading level in the passenger section is equivalent to or higher than that used for reading in the average home. Combination heating and ventilating systems have been devised which maintain comfortable interior temperatures.

Improvements in engine design and power transmission now give acceleration and deceleration rates comparable with those of the average private automobile. Braking systems, operated by compressed air, enable fully loaded buses to be stopped in the same distance as a well-maintained private automobile.

Automatic air-operated doors in the new buses have speeded up passenger interchange and greatly increased safety. If by any chance the door is obstructed in closing, an automatic sensitive edge immediately opens it and allows the passenger to free himself and at the same time prevents the bus from being operated. Similar doors are arranged so that any obstruction to the closing door rings a warning signal in the operator's compartment, enabling him to open the door and assist the passenger if necessary.

Equally important developments have been made in the more technical features of bus operating mechanisms. Engines, transmissions and brakes have been mentioned, as well as the changes in engine location. Equally important is the trend towards unit construction, the complete elimination of the chassis and the construction of the bus as a unit, with each structural element combining with others to serve to give rigidity and strength. In this development the use of light-weight metal alloys has been important, so that buses of all-metal construction are both stronger and considerably lighter than the earlier steel and wood chassis and bodies. Improvements in ease of operation have kept pace with other bus developments, so that the routine duties of the operator are considerably lightened, enabling him to pay more attention to the safety of operation and passengers. Power steering, power clutches, power-operated transmissions, and power-operated brakes, have all been developed and are now in use.

Looking to the future, equally important developments are in the offing. The first fleet of diesels in the United States has been ordered by Public Service Co-ordinated Transport. These 27 buses will be the first in the world to utilize diesel electric motive power as used in modern high-speed trains. Their advantages are several, most important of which are greater torque, increased economy of operation and almost entire elimination of carbon monoxide. Direct power transmission with complete elimination of clutch and gear box is reasonably predictable within the near future.

In its present stage of development the motor bus is a completely satisfactory vehicle for mass transportation under conditions suitable to its economic operation. There is no doubt that its passenger appeal exceeds that of the street car of twenty years ago, which in substantial measure does not differ from the vast majority of street cars in operation today. Possibilities of improvement in passenger traffic on lines no longer able to support street cars are great, though by no means unlimited. With these newer vehicles it is reasonable to forecast some return of automobile passengers to mass transportation vehicles. The extent to which this change takes place will depend upon the character of service rendered, the type of vehicle used, the frequency and reliability of the service, and the attractiveness of the fare schedule. All of these are points for careful consideration by the operators, the public and the municipal officials charged with the responsibility of obtaining, for the citizens of a city, the most satisfactory public transportation vehicle.

It is well to pause here, in conclusion, and remind the reader that THE AMERICAN CITY is endeavoring to present fairly all the modern vehicles of urban transportation, with full knowledge of the practical aspects of the existing situation. These include not only the public right to have the best service it will pay for, but also the investor's right to such protection as it is possible to accord him through carefully considered conversion from electric lines to bus lines.

Whatever the future may hold, there is no doubt that the present involves billions of dollars' worth of power houses, electric lines, equipment and men. This is why there is a transportation problem. This is why full, accurate and broad-gage information is essential to its successful solution.

Even the fundamentals of this information cannot be given in a two-page article. The details would differ considerably for each location, property and city. How then proceed?

That is why THE AMERICAN CITY has initiated this series of transportation articles and from time to time will publish material about the new vehicles—what makes them better and the character of service they fit. The information is gathered from broad sources with the purpose of giving municipal officials the outline of the complete transit picture. This picture for every community is a scientific transportation system that carries all the customers comfortably, quickly, safely, with least interference with street traffic, and with least, if any, sacrifice on the part of the investor, and with due encouragement to the equipment manufacturer in his continual improvement of products.

The primary purpose of this article is to point out the amazing strides being made toward the perfecting of buses. The incentives are great. On the one hand, there is the continual reduction in operating costs and the increasing customer appeal. On the other hand, there is the public credit to be gained by the municipality for maintaining its local transit facilities second to none. The day of the 20-year-old trolley car is over. So is the day of the 10-year-old bus.

Sewage Treatment at Sioux Falls

Part II—Experimental Plant

Unusually Flexible Miniature Plant Paved the Way for Chemical and Activated Sludge Treatment

By JOSEPH B. ESTABROOK
Of Burlingame & Hitchcock, Consulting Engineers
Formerly Vice-President, The Pillsbury Engineering Co., Minneapolis, Minn.

A SMALL experimental plant was designed and set up at the Sioux Falls sewage-treatment plant, with the intake so arranged as to admit continuously 5 gallons of sewage per minute from any point in the main disposal plant, so that any process in the main plant could be modified and enlarged, extended, or omitted in the experimental units, and so that any additional process of treatment could be conducted on a semi-plant scale.

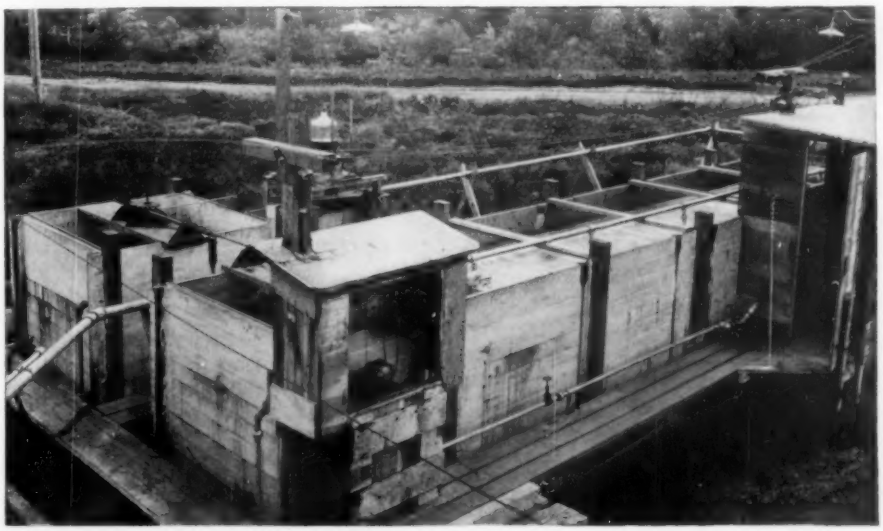
The experimental plant consisted of small wooden tanks, made of 2-inch plank suitably calked with oakum so as to be tight. One of these had a flocculator or revolving paddle mechanism in it; another, a long and narrow tank, had a number of porous tubes along one side of the bottom connected to a small Connersville blower by which air was supplied at very definite rates. Other tanks were equipped with clarifier mechanisms for scraping the sludge thus deposited from the bottom of the tanks and pumping it into a small digester made of a pork cask also equipped with a stirring mechanism. All this equipment was driven by improvised line shafting from a small sewing-machine motor by means of single strands of rubber belt obtained from a local manufacturer of electric refrigerators, or by bicycle chains. The blower, however, had a separate motor and was equipped with a number of different sized pulleys so that the speed could be varied to obtain the amount of air required. The plant was built so that the tanks could be pulled down and changed around and the equipment varied both as to its character and its speed.

Plant Records Complete

This plant was started about April 15, 1933, and was operated continuously until about the first of November of that year. A competent chemist was employed continuously for seven days a week, and samples were taken hourly both day and night and were analyzed in due course. The operating force of the disposal plant handled the sampling and assisted the work in every way. The records of this experimental unit were kept daily, and all results were carefully tabulated and averaged every day. All necessary calculations, charts and graphs were made each evening of all samples analyzed during the day and the final average plotted on two master curves as (1) Biochemical Oxygen Demand, to record stability, and (2) Suspended Solids, to record sludge-forming material.

Even Unsuccessful Experiments Aided

Several extremely unusual and, in most cases, unsuccessful experiments were tried to obtain short cuts in the treatment involved. Quite a large amount of time and trouble was used in erecting a tower 20 feet high in which the raw packing-house waste was taken and circulated similar to the cooling towers used in an ice-plant. The tower, approximately 4 feet square, was equipped with airplane propeller fans in the bottom which blew air up as the sewage trickled down. It was also equipped with a 100-gallon-per-minute pump which, being 20 times the volume



A GENERAL VIEW OF THE EXPERIMENTAL PLANT, SHOWING THE PIPING, DRIVES AND TANK CONSTRUCTION

of the sewage entering the plant, circulated all of the sewage through the tower 20 times. Excellent reduction of oxygen demand and of suspended solids was obtained, as a very satisfactory growth of aerobic-bacterial jelly on the timbers of the towers developed, but the gases generally, and particularly the hydrogen-sulphide, bubbled up from the bottom of the tower in such quantities as to make it almost impossible to work around it. Sometimes the tower was almost hidden in a cloud of bright yellow fumes with a most penetrating odor. If this were on a plant scale, however, the gas and odor production would condemn it, and this experiment was therefore abandoned after being tried for several weeks.

Chemical Precipitation

The chemical precipitation investigation was very much more successful and was incorporated in the final design of the new plant. Coagulant from a container was admitted to the flocculator tank drop by drop and mixed thoroughly by the paddles and then run into the clarifier. A number of different chemicals were tried before it became apparent that a ferric-chloride gave by far the best results. This chemical coagulant only was continued for this purpose through the whole course of the experiments. From 25 to 75 parts per million of this coagulant were admitted to the small mixing tank. It did not seem that the additional reduction obtained from over 35 parts would justify any greater amounts than this. Using 35 parts per million, the amount would be about 1,750 pounds of ferric-chloride per day if all of the sewage flow were thus treated. This amount, at an average price of 3 cents per pound, would cost the city about $50 a day. This is quite within the limits of proper expenditure for this purpose, but if business at the packing plant materially increased, the cost would be increased also, and the additional reduction would not warrant any more expenditures along this line.

Inasmuch as the largest flow from the packing plant occurs when the killing pits and vats are being washed out, the proportion of chemical could be adjusted to the strength and dilution of the wastes during the day. It appeared likely, however, that if the whole chemical precipitation process should be applied only to the packing-house waste, it would reduce the volume of sewage flow to be treated with chemical by half and would also limit the hours during which the flocculator mechanism would operate from twenty-four to nine, thus requiring considerably less power than if it were operated continuously.

A certain amount of time and effort was consumed in attempting to employ the chemical precipitation process as a means of taking out the last of the suspended solids, either as a part of, or subsequent to, secondary sedimentation. Some valuable data were obtained from these experiments, but the results did not apparently justify any major expenditure for either construction or operation. The use of a coagulant, therefore, was determined to be warranted only as a method of pre-treatment of the packing-house wastes. The use of chemical precipitation on the raw packing-house waste, therefore, is very effective in carrying to the bottom of the tank the very fine colloidal material which is the result of the red blood corpuscles of the slaughtered animals escaping into the wash water. This material has a specific gravity very slightly greater than 1, and sinks in water very slowly. The corpuscles seem to be attracted by the particles of ferric-chloride and are carried down with them more effectively than by any other method. The discharge from the chemical precipitation plant did not contain material which was at all difficult to handle with the ordinary clarifier mechanism. This process was therefore made a definite part of the new design.

Activated Sludge Experiments

The other major process in the experimental plant, the activated sludge system of aeration, was started later and ran from about the first of June on through the remainder of the period of experimentation. It was operated with from 1 cubic foot up to 3.5 cubic feet of air. The best results obtained were approximately 1.75 cubic feet of air per gallon of sewage when working with the discharge of the primary clarifiers. Using the very much reduced effluent from the later purification processes, a much smaller amount of air accomplished excellent results, although at no time could a satisfactory activated sludge be maintained with less than one cubic foot of air per gallon of sewage. The returned sludge was varied from 15 to 50 per cent, but on most of the combinations 25 to 30 proved most satisfactory. A great deal of difficulty was encountered with "bulking" in the secondary chamber in the early stages, and it was difficult to keep the return liquid up to a 2 per cent solids content, but this was corrected by the use of lime to raise the pH and by adjusting the small secondary clarifier mechanism to scrape more efficiently.

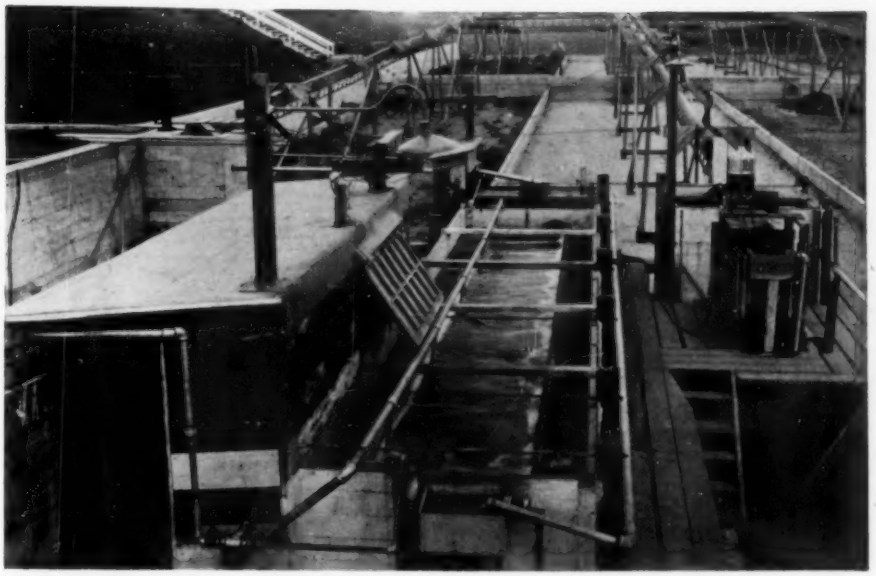
Varied Operation

This plant was operated in a variety of combinations. First, the effluent from the large primary sedimentation tanks was brought to the experimental chemical precipitation plant, and then flowed to the activated sludge tank. This operation was continued for about a month, with satisfactory results.

The raw domestic sewage was then treated, but it was found that it was not feasible to handle this with a reasonable amount of air. The discharge from the small chemical precipitation tank operating on raw packing-house waste was then taken, and it was found that the results obtained were even better than with the discharge of the primary clarifiers. We then split the flow in the main plant, so that one of the primary clarifiers handled the domestic wastes and the other the packing-house wastes; we then led the discharge from the south main clarifier, which was operating on packing-house wastes, into the chemical precipitation tank and thence into the activated sludge chamber. We then changed again and tapped the line from the packing house prior to its entering the main plant; put that through the chemical precipitation plant and then to the small clarifiers and thence into the activated sludge plant. Finally, the effluent from the large trickling filter beds at the lower end of the plant was pumped back to the activated sludge tank and our best results were obtained with this combination. In fact, every possible combination that was at all feasible was attempted and the results recorded.

The Final Run

By this time it was along toward the end of September, which is close to the end of the season at Sioux Falls when it would be possible to operate an experimental plant of this kind. Therefore, the run for the final 60 days was with the best combination as regards reduction of B. O. D. and solids which had been made during the experimental



THE EXPERIMENTAL PLANT, SHOWING THE ACTIVATED SLUDGE AERATION UNIT, WITH A DETAIL OF THE SLUDGE PIPING AND ORIFICE BOX

Note the spiral flow in the tank

period. The average of this final run, however, so closely approximated the average of some of the other combinations as to show that it was quite feasible to design the plant addition for which this experimental work was being carried on, in such fashion that any one of several combinations of operating conditions could be worked out with the full-sized plant.

The feasible combinations divided themselves into several major groups, all of which gave satisfactory results, and in every case the reduction of oxygen demand as recorded in parts per million B. O. D. were over 96 per cent. In several cases this left in the final effluent a smaller content of putrescible matter than is found in many city water supplies before chlorination. The suspended solids, turbidity, and color of the final discharge from these experimental units in many of the samples analyzed approximated that of the city water. Except for the fact that the origin might be known as the discharge from the experimental sewage plant, the effluent could have been used for any purpose except drinking without danger or inconvenience. It is, of course, not to be considered true that this was the condition continuously, but many of the samples taken showed this high degree of purification, especially during the final 60-day run. It is sincerely hoped that this condition may be duplicated for a considerable part of the time when the new plant is operating.

It did not take long after the data started to become available to reach the conclusion that the solution of the main problem was twofold. First, the strength and character of the incoming wastes must be controlled, so as to reduce if possible the load in the primary sedimentation basins and the filters, and especially to even up the enormous fluctuations which occurred from day to day. Therefore, a suitable pre-treatment process must be devised. Second, the reduction of oxygen demand must be carried much farther and the solids content, both suspended and dissolved, must be reduced to so small an amount that further biological or chemical action in any considerable volume would not occur in the river below the discharge outfall of the plant. All of this work, therefore, was carried on, first, to try out several processes and actually prove their efficiency; second, to estimate the cost and difficulty of installing them both as to the price of constructing them and as to the daily or monthly operating charges which would result; and, third, to compare them and reach a final decision which could be recommended to the City Commission.

(To be concluded in the August issue with a description of the addition to the city plant.)

Which Way to Social Security?

WE are convinced that the *only* adequate answer to the problem of the able-bodied unemployed person is *work*, useful productive work for which he receives a wage in payment of value created by that work. We believe also that where private employment fails to provide such work, the public functioning through its government has an obligation to do so. . . .

For this reason the Federal Government has undertaken to provide work for the able-bodied unemployed and to assist the states in providing security for those who cannot work. The acceptance of those obligations marks a forward step on the road to progress. But this is no time for complacency on the part of any of us. Not only does need still exist, but the real battle is just begun. For an employment program is not the cheapest form of assistance in terms of immediate outlay. Not only do men require tools and materials to work, but wages—even security wages—cost more than the subsistence fare of direct relief. It is little wonder that an employment program is not popular with those to whom the best relief program is the cheapest relief program. But we will never believe that the American people as a whole begrudge an average wage of $50 a month to the man who works on one of our projects. If we are criticized by future historians, it will be that we did not do *enough* for our employed, that we did not spend the money necessary to employ *all* who were willing and able to work. For in the long run the vitality of our democracy will be tested by the *adequacy* of our measures for dealing with this problem of unemployment.

—From an address by Aubrey Williams, Deputy Administrator, Works Progress Administration, at the National Conference of Social Work, Atlantic City, N. J., May 28, 1936.

Cash vs. Bonds for Financing Public Improvements in Milwaukee

By PAUL S. GRANT
Member, Committee on Public Finance, City Club of Milwaukee

THE Committee on Public Finance of the City Club of Milwaukee has published a report and study of the city's finances with particular reference to the desirability and feasibility of financing construction of improvements entirely by cash payment instead of partially by the sale of bonds.

The city of Milwaukee's credit is of the highest, and there is a substantial unused debt-issuing power at present, so that a "cash" policy is a matter of choice, and not of necessity. The city's present position is a result both of the state of Wisconsin's careful restrictions on municipal bonded debt, and of a conservative financial policy in the city. At no time has the city issued bonds except to finance permanent physical improvements; there have been no refunding or deficit or relief issues, the latter burden having so far been carried by the Federal Government and the county.

Bond Interest Increases Improvement Costs

The report is based on the self-evident statement that *bonds increase improvement costs by the amount of interest paid.* For instance, the total outlay for principal and interest payments on a 1- to 20- year serial 5 per cent issue is 152.5 per cent of the principal. A policy of issuing bonds every year to finance all or a greater part of the cost of improvements leads ultimately to a fixed burden of interest and principal payments, annually greater than the benefits received in the way of cash invested over the same years, and the inflexibility of charges for interest and principal on outstanding bonds makes it necessary, in times of declining tax collections, to make up the decrease by reducing the year's expenditures for improvements, or for services. During the first decade of the period studied, 1914-1923, for every dollar put into improvements, the city raised only 78 cents, the result of financing three-quarters of the improvements by sale of bonds and postponing payment to some extent thereby. During the second decade, 1924-1933, for every dollar going into improvements the city spent $1.05—in other words, the bills were coming in. And in 1934, when expenditures had to be reduced, it was the improvements that were cut, and, for every dollar going into improvements, over $8.00 had to be raised for debt service and that year's cash cost of improvements.

An estimate for the 20-year period, including as an element of cost the increase in bonded debt during the period, but including interest paid only during the period, indicates that financing improvements by bond issues increased the cost of the improvements 20 per cent, and increased the cost of that portion which was financed by bonds 33 per cent.

During the period the annual charges for debt service increased every year until 1932. In that year the issuance of bonds stopped, and none have been issued since. City officials have indicated verbally an intent to finance future expenditures for improvements without bonds, each year's expenditures to be paid by cash provided in the budget.

Recommendations

The report of the City Club Committee points out, however, that the maintenance of this policy requires along with it a planned, long-range program for public improvements which must be laid out to use to the best advantage the cash available. Accordingly, the Committee recommends the following:

1. A planning of expenditures for permanent improvements, at least to the extent that no sudden large outlays confront the city.
2. A central planning authority for this purpose, presumably the Board of Estimates, and cooperation of city departments and independent bodies with this central authority and the program which it develops.
3. Possible changes in accounting methods, or in budget appropriations and reports, so that expenditures for capital account are separately defined.
4. Planning a certain stable or maximum mill tax in the budget to include both debt service and expenditures for capital account.
5. Publicity building up public support for this policy.
6. No bonds.

It is the Committee's opinion that expenditures for capital account are a recurring, annual item, and that if they are budgeted and paid for in cash, the resulting saving in interest more than justifies a period of restriction during which old bond issues are paid off.

Milwaukee's Amortization Fund.

The city of Milwaukee is fortunate in having created, some years ago, an amortization fund which by 1943, it is estimated, will be equal to the city's bonded debt (providing no new bonds are issued), so that the period of self-denial will be seven years, after which the recommended mill tax will allow an annual expenditure for improvements greater than has been put into improvements under the "bond" method of financing.

It is realized, of course, that the larger the city, the more nearly can capital expenditures be equalized in annual budgets over a period of years. While Milwaukee with its population of more than 500,000 has advantages in this matter over cities of 50,000 or 5,000 population, many such smaller municipalities could, in the author's opinion, approach the pay-as-you-go plan by gradual steps, to the great benefit of their taxpayers.

Buenos Aires Bids for Title of "World's Cleanest City"

One of the Most Beautiful Cities Now Plans Cleaner Streets at Lower Costs

LONG famous as one of the most beautiful of the world's great cities, Buenos Aires, Argentina, now bids for the title of the world's *cleanest* city. With a population of well over two million, and with some of the finest buildings in South America, Buenos Aires covers an immense area with an exceptionally large mileage of paved streets. Up to 1931, street-cleaning methods had been largely those of the past generation. Horse-drawn brushes which swept street refuse into the gutters were augmented by "white wings" and the daily flushing of gutters and catch-basins. In 1931, however, the city fathers of Buenos Aires decided to purchase modern equipment, and with the purpose of finding out the various advantages offered by the products of all manufacturers, the city purchased one motor sweeper from each of the leading makers in the world. Among these were several of German make and one Austrian machine, as well as representative American makes.

Unusual Tests

These motor sweepers were put through a most unusual test for efficiency. It seems that the Latin love of display and fiestas requires frequent parades in which the crack cavalry regiments are expected to take part. To protect the feet of the horses and to prevent their falling, wet sand is spread across the streets on the day of the parade, and this must be removed before the following morning. A further important consideration in weighing the advantages of motorized street sweeping versus hand labor lay in the fact that the average wage paid to the municipal laborers is about four or five pesos for the day's work, or just under a dollar in U. S. money.

THE "LINE-UP" OF AMERICAN-MADE MOTOR SWEEPERS IN THE PLAZA DE MAYO, BUENOS AIRES, ARGENTINE

At the far end of the square is the Mayor's Office or "Intendencia"

With these facts uppermost in the minds of the department engineers, the specifications were prepared in far more detail than is customary in this country. An amusing, if irrelevant, incident in this respect appeared when one of the manufacturers who received an invitation to bid found that his specification required that the machine which he was to offer must be able to pick up, not wet sand (arena), but wet oatmeal (avena).

Sample machines were delivered and received intensive tests in actual operation on the city's streets. With the tests completed and cost records available, the Board voted to purchase motor sweepers, not only as an improvement in method, but as a saving in the cost of street cleaning.

Twenty Machines Purchased

Unfortunately, political unrest and a change of government delayed the final award, but in time this problem was solved. Final bids, from one German and two American firms, were opened on April 10, 1935. The award was made in line with the original report following the test months, and the contract was given to the agents of the Austin-Western Road Machinery Co. on October 19, 1935.

The only change made from the regular models used in this country was in the change from right-hand to left-hand drive. Buenos Aires traffic operates on the English system of passing to the left of approaching vehicles. Consequently, this machinery had to be built to work in the left-hand gutter.

As the city government of Buenos Aires desired to make a gala display of these machines the moment they were received, they were shipped unboxed so that labor might be saved, and also that they might be driven from the ship side to the city square and later to the city garage. They were landed from the S.S. *Delalba* on January 10, and were on display between the President's palace and the office of the Mayor. The formal trials were made that night.

Today each machine is following its scheduled route on the wood-block and stone-paved streets of Buenos Aires, doing its part to accomplish for Buenos Aires its desire to be "the cleanest city in the world."

A "Creed" for the Improvement of Rivers

By HENRY S. CURTIS

WHILE the following water creed would probably be agreed to by most thoughtful people, it is almost entirely at variance with public discussion and legislation. Although based on a study of a single river, the project was not undertaken from that point of view, but in the belief that the problems of the Huron are much the same as those of all the other small rivers of Michigan and of the United States, and that a solution for one suggests a solution for all.

Even in the case of the Mississippi, while navigation is important, that great river does not hold the place that it did in pioneer days before the coming of the railroads and the highways. If the cost of making and maintaining the channel were charged against the saving in rates, no corporation, however large, would undertake it as a business proposition. On the other hand, while the Norris Bill creating the Mississippi Valley Authority does not mention the word recreation, there can be little doubt that the value of the fishing, pleasure boating, parks and picnic grounds, river drives, and residence sites overlooking the river vastly exceeds any value arising from commercial navigation.

The "creed" has been signed by twenty-three technicians, who have written papers on the improvement of the Huron Valley for a forthcoming report. Of this number, five are engineers dealing with water in various relationships. All the signers, except one, agreed to all the statements. This one (not an engineer) objected to section 4 on water power.

1. The flowing water and fish in our streams are recognized as public property.
2. These public or semi-public rights are recognized by law:
   a. Commercial navigation, with maintenance of channel
   b. Power
   c. Irrigation
   d. Public and industrial use of unpolluted water
   e. Recreation
3. These uses are of very different values. There is practically no commercial navigation on the interior rivers of the state except at their mouths.
4. Significant power development is confined to limited areas on five or six of our larger streams. It has little meaning on the hundred or more of our smaller ones.
5. There are no important irrigation projects using our streams.
6. The use of our streams by industry and city water works is considerable and important. Pollution is forbidden.
7. The recreational use of these waters for swimming, boating, picnicking, camping and fishing, and their marginal use for driving, hiking, and residence, applies to nearly all streams and brings many millions of dollars into the state every year.
8. Streams have much the same uses as parks, but if the public is to have more than a minimal use of this great public resource, there must be some state department in charge to protect, plan and develop public interests.

(Signed)

Alexander Ruthven, President, University of Michigan
Dr. W. B. Hinsdale, Professor Emeritus of Anthropology
Edwin Goddard, Emeritus Professor of Law
John W. Munson, President, State Teachers' College, Ypsilanti
Shirley Smith, Vice-President, University of Michigan
Henry E. Riggs, Emeritus Professor of Civil Engineering
H. W. King, Professor of Hydraulics
C. O. Wisler, Professor of Hydraulics
Henry S. Curtis, In Charge of Survey
William C. Hoad, Professor of Sanitary Engineering
Lewis M. Gram, Professor of Civil Engineering
Walter MacPeek, Boy Scout Executive
Clarence Johnson, Professor of Surveying
Samuel T. Dana, Dean, School of Forestry
Harlow Whittemore, Head, Department of Landscape Design
Kenneth C. McMurry, Head, Department of Geography
Frank Leverett, United States Geological Survey, retired
C. D. Larue, Professor of Botany
Max. Peet, Professor of Surgery
Carl L. Hubbs, Curator of Fisheries
Arthur W. Stace, Editor of *Ann Arbor News*
Henry M. Bates, Dean, Law School
Harold Smith, Head, Bureau of Government
Jacob Crane, Regional Consultant on Water Resources

Modernizing Consumers Records

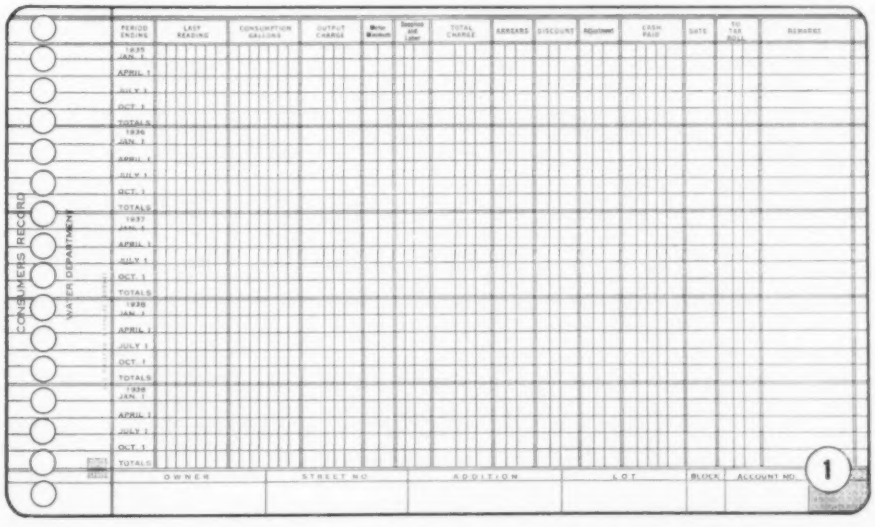
Loose-Leaf Binders Prove Effective for the Rhinelander, Wis., Water Department

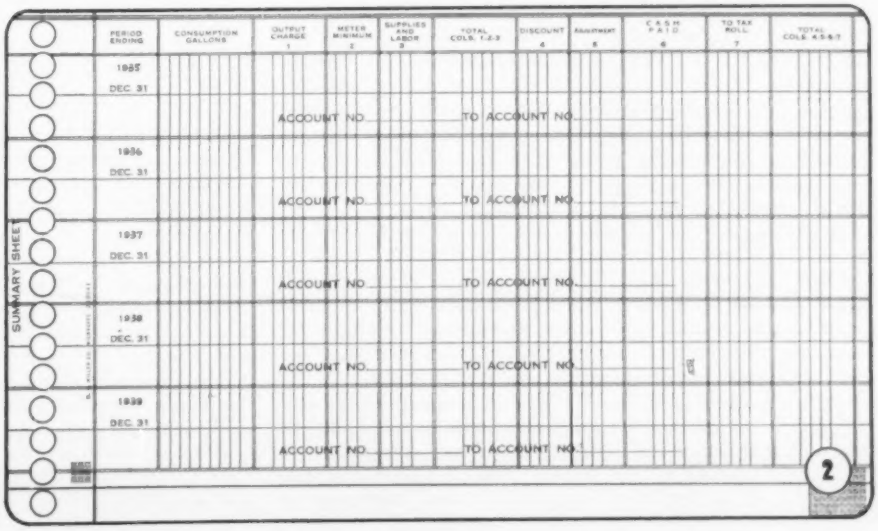
By THEODORE M. WARDWELL
City Manager, Rhinelander, Wis.

TWO years ago Rhinelander was faced with the necessity of purchasing a new consumers register for the Water Department. The existing ledger was extremely unwieldy and difficult to work on because of its size, 51 x 16¼ inches when open. In addition, owing to frequent changes in tenants and the ownership of property, the book became unsightly, since all changes were written in by hand.

A careful search was made for a simpler and more compact system of keeping these accounts. We found a loose-leaf system, made by the H. C. Miller Co., Milwaukee, Wis., which after some changes had been made in the arrangement of the columns and headings, fitted our needs admirably. In this there is an individual card for each consumer. These cards carry such information as name, address, lot, block, addition and account number, typed at the bottom, and are inserted in the binder in such a way that this information on all cards is exposed and an individual consumer can be located at a glance.

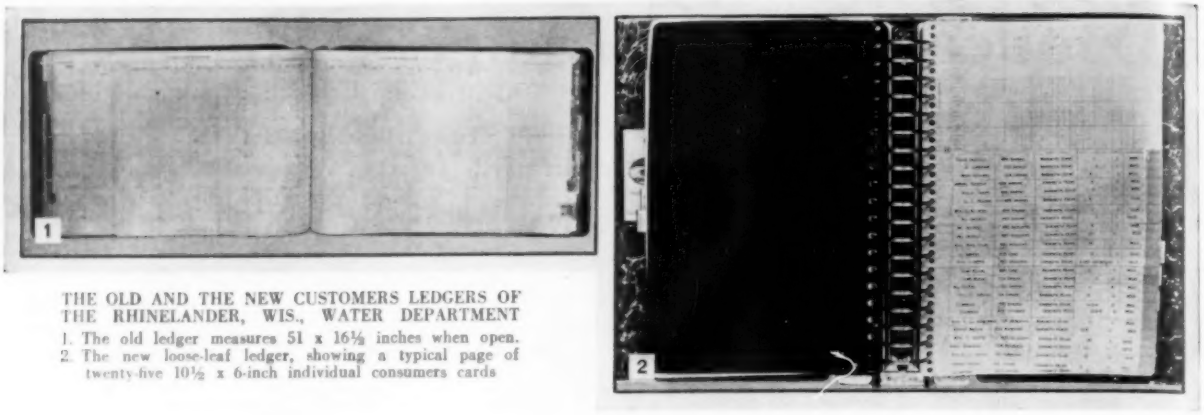
Twenty-five cards are inserted on each page, with a suitable blank division sheet between each two pages. Heavy division sheets with marginal tabs are inserted between districts. The cards are inserted in numerical order as regards lot and block under each district, simplifying the search for any record. They are identical in make-up for metered and flat-rate consumers, except that the cards for





CARDS FOR USE IN THE CONSUMERS LEDGER

1. The individual consumers card printed on pink paper for metered consumers, and buff paper for flat-rate consumers. For the latter there are no entries in the first two columns; the charges are listed under "Output Charge." 2. The summary sheet which is inserted after each page of about 25 consumers cards. This is printed on white paper



THE OLD AND THE NEW CUSTOMERS LEDGERS OF THE RHINELANDER, WIS., WATER DEPARTMENT

1. The old ledger measures 51 x 16½ inches when open.
2. The new loose-leaf ledger, showing a typical page of twenty-five 10½ x 6-inch individual consumers cards

metered consumers are printed on pink paper, which easily distinguishes them from the buff of the flat-rate consumers cards. As meter accounts are rendered quarterly, and flat-rate accounts semi-annually, it is of considerable advantage to have this difference in color between the records of the two types of consumers.

At the end of each page we insert a white summary sheet upon which we carry the totals of the preceding individual cards. At the end of the year the grand totals are obtained by totaling the summary sheets only. All cards are printed on both sides, making them good for a ten-year period. We use four binders to handle approximately 1,600 consumers. The new system permits the insertion of new cards at any time and is very neat in appearance. We use an Addressograph to address all water bills in duplicate, on the stub and on the main bill, in one operation.

Relief – The American Way

By NEVILLE MILLER
Mayor, Louisville, Ky.

ON the doorstep of every City Hall in America has been placed the relief problem in its most vivid and real aspects. It is only natural, therefore, that the mayors of the country, who are the sounding-boards in the life of any community, should be able to speak from experience on this vital subject. Regardless of party affiliations, there appears to be an almost unanimous conviction of municipal executives in all sections of the country on the practical answers to the four questions:

"Who is to get relief?"
"In what form is it to be given?"
"Who is to pay for it?"
"Who is to administer it?"

In considering the question "Who is to get relief?" it is impossible to provide jobs for all the unemployed regardless of their need under the policies of the present Congress. We must accept as an existing situation that relief is largely limited to those in immediate need, the destitute, who for purposes of definition may be placed in two general categories: (1) the employables, that is, the able-bodied who are physically and mentally capable of working; and (2) the unemployables, which is to say, the old, the infirm, the crippled, and the ill who are incapable of productive work.

In approaching the problem of what form of relief is to be provided, we have three general alternatives: (1) food orders; (2) sufficient weekly funds to buy groceries and other necessities; and (3) work relief. Among municipal executives there is no issue as to work versus direct relief, either in kind or in cash, for those able to work. We are convinced that the preferable form and the American way is that of work.

Then we come to the question of who is to pay for the cost of relief. In 1932 the Federal Government felt compelled to replenish the exhausted state resources and inaugurated a "grab-bag" method of distribution. This inequitable system was changed in 1934 at the suggestion of the Conference of Mayors, and the President pushed through a plan whereby the Federal Government would assume all responsibility for the employables in the form of work relief, and the states and local governments would care for the unemployables as they always had prior to 1932. We have now had nearly a year's experience under this plan. Most of the destitute employables have received work, and the work done has been of a generally useful nature. And in our opinion the program has on the whole been administered effectively and fairly.

On the other hand, there are two valid criticisms. The Federal Government has not taken care of all the employables on the relief rolls; and, secondly, the cost of materials, supervision and equipment for the WPA program has been met by the cities and the other local sponsors. This hedging originated in a dearth of funds due to the absorption of relief moneys by other agencies. Its disastrous result has been a revival of a movement to have the Federal Government again participate in meeting the costs of direct relief. No expert has yet been able to prove that the states cannot meet the problem of the unemployables, and we must be seriously concerned with any threat to our program of work relief or we may lose what we consider to be one of the fundamental contributions to relief administration of the past four years.

Fourthly, we approach the final question: "Who is to administer relief?" The events of the past four years have demonstrated, I believe, that Washington has had a more sympathetic and better-informed approach to the problems confronting the metropolitan areas than have the 48 state governments, most of which are dominated by rural interests. After mature consideration of the present system, as we have seen it in operation, most of the municipal executives are of the emphatic opinion that the present method of organization of the Works Progress Administration, although not perfect, is superior to any proposed alternative yet advanced.

—From an address delivered at the meeting of the American Public Welfare Association, at Atlantic City, May 25, 1936, by Mayor Miller, who is a member of the Executive Committee of the United States Conference of Mayors.

Selecting a Method of Sludge Disposal

By N. T. VEATCH, JR.

Black & Veatch, Consulting Engineers, Kansas City, Mo.

THERE are several methods of sewage sludge disposal which may be considered as standard, but experiments are being carried out in this field continuously. Among the processes now in use are: air drying of digested sludge on open and on glassed-over beds; spreading of wet digested sludge on land with or without cultivation; lagooning of raw and digested sludge; dewatering of raw and digested sludge on vacuum filters; incineration of dewatered sludge; the manufacture of fertilizer; and disposal at sea. This list covers present practice in the United States. There are a number of places where more than one of these processes are used. The fact that each of the processes mentioned has actually given satisfactory services, would indicate that each of these methods of sludge disposal has adaptability under certain conditions, but it is quite difficult to make definite comparisons between the processes, on account of the large number of variables, which include: character of sewage; quantity involved; climatic conditions; character of soil; and possible fertilizer market. There are many instances where several different processes have been tried, but the fact that experience in one particular locality has shown one process to greater advantage than another does not mean that the process abandoned would not be applicable elsewhere.

Each City a Different Problem

Investigations by C. E. Keefer indicate that sludge at Baltimore, Md., can be dewatered at a smaller cost by filters than by air-drying. Estimates of the comparative cost of dewatering by vacuum filters and by air-drying at Denver indicate a definite saving in favor of air-drying. The climatic conditions are different in the two places, the soils are different, the quality of sewage differs and, in fact, they present two separate and distinct problems aside from the fact that both cover sewage treatment and both involve comparatively large quantities of sewage sludge.

There has been a tendency to select the type of process used in the disposal of sludge somewhat by the size of the plant. Here, again, each problem is separate and distinct from others so far as detailed application is concerned, because the requirements of the small job may often be more rigid than those of the large one.

Shall We Make Fertilizer?

While sewage sludge in itself is not a high-grade fertilizer, it has been amply shown that it can be advantageously used by farmers and for parks, golf courses and lawns without conditioning. It has also been shown that it makes a good base for conditioned fertilizer. At Dayton, Ohio, the city has been able, by drying and pulverizing air-dried sludge, to produce a fertilizer which has a ready market and which is sold on a basis that makes the additional processing worth while. Here, the sludge is dried on glass-covered beds to less than 10 per cent moisture, pulverized, sacked and sold. Certainly, where a city is able to develop a market for its sludge as fertilizer, and where it can be sold at a figure that will mean an income in excess of cost, other processes, as, for instance, incineration, are not economical.

Study the Problem First

The author urges that engineers and officials give more thought and study to the adaptability of all methods of sewage treatment and sludge disposal, and refrain from hastily accepting the process used in nearby cities or the one which is popular at that particular season. The taxpayers' money would be expended more wisely if all facts relating to each process were weighed and the selection of the process predicated on the findings.

The disposal of sewage sludge involves two distinct operations. Sludge must be dewatered to the point where it can be handled conveniently, and then follows the question of disposal. In the first step the cost of digestion and air-drying should be carefully compared with the cost of conditioning raw or digested sludge and dewatering it in vacuum filters or by spray drying or otherwise. The cost of conditioning digested sludge is less than that of raw sludge, but on the other hand the cost of digestion must be charged to the former, and it is quite possible that the dewatering of raw sludge may be the economical solution in large installations, particularly when operated in connection with incinerators. Favorable experience in Chicago, Ill., and Dearborn, Mich., seems to point in this direction. It should be remembered, however, that well-digested sludge is a relatively inoffensive product and can be handled in many ways without causing nuisance, and, for the present at least, the plant designer should have some good reason if he departs from the more or less standard scheme of digestion and air-drying.

The economic disposal of dried sludge involves a balance of cost of incineration against making it available as a fertilizer of some sort. This demand for sludge as a fertilizer usually has to be developed in each case, but so many cities report that the demand exceeds the supply that here again one should hesitate before resorting to incineration.

The lagooning of sludge has not been looked upon favorably, but as a matter of fact there are places where, owing to the character of the sewage and other natural conditions, lagooning is a very practical means of disposal. This is another example indicating that no general statement can be made that one process has universal advantage

over another, and leads to a reiteration of our urging that the application of all data on the question of sludge disposal be considered from a broad-minded viewpoint.

There are many other features that must be considered in selecting the type of plant which have been omitted in this discussion. For example, the possible utilization of gas for power or heat deserves serious consideration in any modern plant.

Summary

It is believed that the best process for the final disposal of sludge for any one situation is that which will give the lowest cost, considering all elements. Also, the selection must sometimes be based on public policy: for example, if a plant is located in an area where a supply of fertilizer would be advantageous to the community in general, it would be sound policy to manufacture fertilizer, even though some other process might show a slightly smaller cost of disposal. This situation would not exist often, and therefore it is felt that the statement that the best means of sludge disposal would be the one giving the lowest yearly cost, considering all items, is a reasonable one. This assumes that all processes would be required to meet local conditions so far as odors and nuisance are concerned.

Land Use and Local Finance

BECAUSE of the intimate current relationship between land use on the one hand, and the volume of debt, the true value of property, and percentage of uncollected and uncollectable taxes on the other, there is special timeliness in a study of "Land Use and Local Finance," prepared for the Westchester County (N. Y.) Commission on Government by the Institute of Public Administration under the direction of Philip H. Cornick. Excerpts from the Summary and Conclusions of this report, of interest beyond the confines of Westchester County, follow:

"The analysis has revealed the fact that the greater part of the outstanding arrears of taxes have accumulated in all parts of the county against the two types of property—vacant lands in premature subdivisions, and large multi-family and business buildings erected in premature apartment house and business zones. It has revealed the further fact that public improvements, installed to serve the vacant lots which are now in arrears for taxes, are responsible for the existence of a large but undetermined part of the outstanding debt, and of the recurrent annual tax burden. Slender evidence, which has not been presented in detail, indicates that through the adjustment of capital structures, whether by composition and adjustment or by foreclosure, the better-located large buildings are again beginning to pay taxes. A very large percentage of the vacant lots now in arrears, on the other hand, have acquired without legal warrant almost the same status as tax-exempt properties. The only difference is that on the latter, taxes are neither levied nor collected; on the former, they are levied but not collected. The county's experience in the past with the wreckage of premature subdivision on a small scale holds out small hope that any considerable part of the present over-supply of vacant lots in arrears, outside of a few choice areas, will relinquish this quasi-exempt status for some time to come.

"Since what has been done cannot easily be undone, the county will have to adjust itself to the facts as they exist. It will have to support and retire its heavy debt without much immediate help from the vacant lots for which so large a part of it was created. It can do this by the foreclosure of tax liens on the properties in arrears and by the reduction of the assessed valuations on those whose owners are still struggling to pay. The experience of some of the municipalities in Florida, which suffered from even more severe cases of premature subdivision, indicates that this course will produce larger revenues from an excess of vacant lots, and will result in greater relief to those who pay taxes on improved properties, than the alternate course of holding assessed valuations on the surplus lots high, and of leaving them in the ownership of the defaulting taxpayers.

"In order to accomplish these objectives most effectively, a re-allocation of financial functions within the county is desirable. Control over new debt issues is impossible as long as 170 units have independent powers to incur debt subject to separate and overlapping limitations; as long as the individual units in certain layers of the overlapping independent agencies have the legal and enforceable rights to receive their levies in full, regardless of the extent of the chronic delinquency which exists within their borders; and as long as the units responsible for the collection of taxes are not only authorized, but compelled, to borrow in order to meet the difference between the levies made by other agencies, and the sums which they have succeeded in collecting. Control over the assessed valuations in the tax districts of the county, which provide not only the basis on which the debt limitations for the overlapping layers are computed, but which also serve after equalization as the tax base on which the burdens of overlapping debt are apportioned, cannot be effective as long as twenty-two sets of assessors, some of them working part time and without clerical assistance, are responsible for interpreting the intricate mass of factors which influence property value. . . .

"The county must develop means for a more effective control over land uses than its component parts have been able to establish. As the basis for this control, it must first establish the facts. The facts which have been presented in this report were all drawn from public records where they had been buried away. Other facts, which also have an important bearing on land use and the closely related elements of public finance, are still buried away in other public records. A central office, equipped with modern installations for mechanical recording, summarization, and analysis, could make all of the information which has been laboriously collected as the basis for this report, together with many other types of important information, promptly available for the guidance of the legislative bodies responsible for the levy of taxes, the authorization of public improvements, and the issuance of bonds. The same information would be of invaluable assistance to the assessors and the collectors, as well as to commercial appraisers, lending institutions, and investors. Through the compilation of this information, the foundation would be laid for the development of a system of control over land uses which would be effective in making the local governments within the county serve primarily the residents, and not the absentee speculators. . . .

"A coordinated control over future bond issues, and over the types of land uses which breed a demand for unneeded improvements, is essential if new debt is not to be incurred in the future at a more rapid rate than old debt is paid off. Only as steps are taken to insure a progressive decline in the volume of debt through these devices, can the resident taxpayers and the owners of income-producing properties hope eventually to bring the costs of government into line with the benefits they receive as the result of governmental activities."

Demolition of Fire Breeders

By PERCY BUGBEE
Assistant Managing Director, National Fire Protection Association

WHAT was, I believe, the first good definition of a fire breeder appeared in the State Fire Marshal Act of Ohio when this Act was originally drafted some twenty years ago. This definition reads as follows: "A building or other structure which, for want of repairs, lack of or insufficient fire escapes, automatic or other fire-alarm apparatus or fire-extinguishing equipment, or by reason of age or dilapidated condition, or from any other cause, is especially liable to fire and which is so situated as to endanger other property or the occupants thereof."

This definition of a fire breeder appears in the suggested ordinance establishing a bureau of fire prevention which has been adopted and recommended by both the National Fire Protection Association and the National Board of Fire Underwriters. Most cities have written into their building laws a provision giving the building inspector the right to condemn and have removed buildings that are unsafe structurally. Most buildings that are structurally unsafe are apt to be a fire menace, but many buildings that may be classed as fire breeders are not necessarily buildings that are structurally unsafe.

Legal Requirements

There exists considerable confusion as to the legal requirements and procedure necessary for the demolition of fire breeders. I have given this question considerable study in order to determine and present in this paper what appears to me to be the best procedure to follow. It seems to me that the fire chief and the inspectors of the bureau of fire prevention, where such a bureau is established, should very definitely be given the right to cause the removal or proper repair and protection of buildings that are fire breeders. The best procedure is to provide that the property owner affected may have the right to appeal the order from an inspector to the chief of the fire department; and if the order is sustained or confirmed by the fire chief, the right to appeal to the municipal court.

Along with this power of the fire department, however, the building department of the city should be given quite broad powers for the condemning and removal of fire breeders. This can be handled by proper wording of the clause in the building code on the powers of the building commissioner.

The legal set-up in New York City is interesting and desirable. A provision of the New York City charter gives the fire commissioner the power to order any building which, in the opinion of the commissioner, is inadequately protected against fire, to be vacated or condemned and removed. The new New York building code which is now pending contains the following provision: "Any structure or part thereof that from any cause may now be, or shall at any time hereafter become, dangerous or unsafe shall be taken down and removed or made safe and secure." These provisions, it seems to me, if properly interpreted, give both departments in New York City proper authority to order the demolition of a fire breeder.

It seems to me important that the provisions of any building code should clearly define an unsafe building in such a way that fire safety may be included, and not simply structural safety. The new Detroit building code has the following interesting provision: "Whenever any building shall become vacant or unsafe, and the doors and windows, or substantial part of them, shall have been removed or opened, leaving the interior of the building exposed to the elements and accessible to entrance by trespassers, such building shall be deemed to be dangerous and unsafe."

The New York State Conference of Mayors issued a model fire prevention bureau ordinance in 1927. This ordinance does not include the definition of a fire breeder and, in my opinion, does not give the fire prevention bureau adequate authority to secure the removal of such structures. The Conference of Mayors issued a model ordinance relating to unsafe buildings in 1930. This is a good ordinance and gives the proper procedure to be followed, but I think it might have been improved if a more adequate definition of what is meant by an unsafe building had been written into the ordinance. I think it is questionable if a building that was structurally safe but a fire breeder would be contemplated by the ordinance as now written.

Accomplishments in Milwaukee

So much for the legal procedure. Now what can be and what has been accomplished in the way of actual results in this field? Perhaps one of the most striking campaigns to secure the removal of dilapidated and dangerous buildings has been that in Milwaukee, Wis. Authority for the condemnation and removal of such buildings in Milwaukee is vested in the City Building Department, but in the campaign which has been carried on since 1928 the Building Department has worked in entire harmony and cooperation with the Bureau of Fire Prevention of the Fire Department, and both departments should receive credit for the work accomplished. Since 1928, 3,912 buildings have been razed in Milwaukee, ranging from 271 in 1929 to 750 in 1935. The work is still continuing on a large scale. In his last annual report, Building Commissioner Gurda of Milwaukee expresses some uneasiness over the fact that the demolition program has not been supplemented by a construction and reconditioning program, and that an acute low-rent housing shortage may ensue. Mr. Gurda makes the following interesting and striking comment on this activity: "Since the year 1928 the floor area contained in all the buildings razed to date amounts to approximately 135 acres and is equivalent to a building having dimensions of approximately 43 city square blocks, 2 stories and 26 feet high."

In the course of the campaign a comprehensive survey was made in Milwaukee for the purpose of drawing up a plan of condemnation and demolition of unsafe buildings. The survey indicated that approximately 30 per cent of the frame buildings of the city were subject to condemna-

tion orders and demolition. In the fire area of the city alone there were found to be approximately 6,000 buildings classed as bad or extremely bad. One reason for the success of the work in Milwaukee has probably been that early in the campaign the Circuit Court of Milwaukee County upheld the Building Commissioner in a suit brought against him by a property owner. The property in the case was a one-story frame garage and two two-story frame storage buildings located in the fire limits. They were over 60 years old and entirely of combustible material. The Building Commissioner determined that the buildings were beyond repair and a fire hazard to life and property. The Court found that the order of the inspector directing the tearing-down of the buildings was fair and reasonable, and directed that the buildings be removed forthwith.

Portland and Omaha

Another remarkable campaign was conducted by the Fire Marshal of the city of Portland, Ore. This campaign was successful in having 790 buildings razed during the first 14 months. It was carried on without specific legal authority. The Fire Marshal secured the permission of the owner of the dilapidated building in question to have the building removed without expense or liability to the owner. He then secured the services of building wreckers to agree to remove the building, securing the proper permit from the Building Department and doing the work to the satisfaction of the Fire Marshal, the wrecker to receive for his pay the material in salvage. By this plan the owner is not forced to pay anything for the removal of the building, and the city is not put to any expense. The interest and energy of the Fire Marshal and his men in doing the contact work and arranging for the removal of the buildings did the trick.

A method of ridding the city of Omaha of hazardous, dilapidated buildings was successfully adopted by the Chief Engineer of the Building Department of that city. He had had considerable difficulty under an old ordinance in promoting wrecking operations. He secured the adoption of an ordinance which provided the authority to condemn and tear down a dilapidated structure and to sell the material to cover the cost of demolition. Any remaining balance of the sale was applied to back taxes. The way that this ordinance worked out in practice was that the owner of a condemned building usually immediately bargained with some wrecker to remove the building. If the property has been abandoned and no heirs to it have been discovered, the Building Department sells the building to the highest bidder, and the money is applied to taxes, which in most cases have accumulated for several years.

Campaigns in Other Cities

An interesting campaign has been carried on in Chicago. Considerable difficulty in securing demolition in various cities in Illinois was occasioned because of the Illinois City and Village Act under which police power is exercised only when a structure is ready to collapse. To surmount this difficulty, a campaign was carried on by some half-dozen official and unofficial agencies to secure the demolition of some 2,000 unsafe buildings by the consent of the owners. Buildings were discovered through a PWA survey, which disclosed that out of some 6,000 suspected buildings, 4,000 needed extensive repairs, and the other 2,000 were beyond repair and unsafe. A Metropolitan Housing Council was formed which included such agencies as the State Housing Board, the City Housing Authority, the Building and Health Commissioners, and the Emergency Relief Commission. Laborers for wrecking the properties were secured from the Emergency Relief Commission and were employed by licensed wreckers. The owners of the properties were invited through publicity to offer their useless buildings for demolition. In this way work was supplied to people needing relief, and many unsightly, hazardous buildings were removed.

Successful campaigns have been carried on entirely apart in some cases from the building and fire departments. The City Planning Board of Lowell, Mass., conducted a campaign on old buildings in that city which has brought down 300 fire breeders in the last couple of years. Efforts of the superintendent of the insurance patrol, backed by the Fire Prevention Committee of the Worcester, Mass., Safety Council, has resulted in the tearing down of 600 old buildings since 1932. Persuasion only was used in this case. Other cities that have reported successful campaigns are Cincinnati, Des Moines, Hartford, Newark, Minneapolis, San Francisco and St. Louis.

Certainly such work is of a most constructive nature. The removal of fire breeders most definitely reduces the conflagration hazard of any community. It improves the appearance of the community and makes for better health and public morals. Every city should see that the fire and building departments are provided with adequate authority for the condemnation and removal of dangerous buildings, and that a thoroughgoing, intelligent campaign is instituted to bring to light such buildings and secure proper action on them.

—From a paper presented at the New York State Conference of Mayors and Other Municipal Officials, at Kingston, N. Y., June 5, 1936.

Greenbelt Project Will Benefit Prince Georges County Finances

THE Resettlement Administration's policy is to turn over its projects to private corporations in order to return the land to tax rolls. Completion of the Greenbelt project in Prince Georges County, Maryland, will place on the county tax lists a property valued for taxation purposes at approximately $4,500,000. The 1935 assessed valuation of the property prior to its purchase by the Government was only $337,000. A net increase in county tax valuations of more than $4,160,000 will thus result.

At the the 1935 county tax rate, this increased valuation will yield more than $52,000 per year in taxes. This sum is fully sufficient to cover all costs for schools and other county services which the new community will require. In addition, improvements being made at Greenbelt have already been reflected in a large appreciation in value of adjoining properties.

The analysis made by experts of the Resettlement Administration shows several other tangible benefits which Greenbelt will bring to Prince Georges County. Construction demands at the new town have provided jobs for all available relief workers in the county, in addition to affording employment to a large number of skilled, non-relief laborers. The project will provide the county with roads, sewage and water systems, and schools, all of which are valued at about $1,325,000. The county population will be increased by the 4,000 future residents of the new town, which will in turn reduce the per capita debt burden of the county from about $35 to about $33. Increased county administrative costs because of the added population will be more than offset by Greenbelt's future taxes.

Maintenance of Brick Pavements in Columbus, Ohio

By P. W. MAETZEL
City Engineer

THE maintenance of brick pavements, as well as other types of paving in the city of Columbus, has received considerable attention since the early years of the present century, at least to the extent which available funds permitted.

Such maintenance prior to the setting aside of funds derived from the motor-vehicle tag and gasoline tax sources was prosecuted entirely with funds allocated from the general tax moneys or the city vehicle tax, which the city received. Maintenance frequently suffered from the fact that such funds either were diverted or were insufficient. Beginning with the establishment of a fund composed of motor-vehicle tag and gasoline tax moneys which was by legislation allocated for street maintenance and construction purposes, a continuous program has been mapped out each year to maintain our pavements in good condition.

The city of Columbus has about 214 miles of brick pavements under maintenance, built at a cost of over $10,000,000 and containing over 3,800,000 square yards of pavement. These streets vary in age up to 48 years. During the period of 1924 to 1934 inclusive, an average of $132,024 was spent annually in repairing these streets, at an average cost of $1.80 per square yard of repairs made, and at a cost of approximately 3½ cents per square yard of pavement under maintenance. This cost includes about 15 per cent for overhead, consisting of monthly salaries, material-yard operations, etc.

Maintenance Forces

The maintenance organization consists of an engineer in charge, a general foreman and ten to fifteen repair crews, each composed of foreman, paver and usually ten laborers. The number of crews varies as funds are available.

It is customary to make a survey of the paving conditions in the early spring and to assign the paving crews to different sections of the city, taking the more important streets first and beginning work during the latter part of March or the first of April. Each crew is equipped with all necessary tools, barricades, red lanterns, tool-box, tar kettle, etc., and is serviced by trucks from the material yard. Daily contacts by the general foreman, engineer in charge or other in authority are made, and the program is normally carried on until about the first or middle of December, weather permitting and sufficient funds being available.

Causes of Pavement Defects

Defects in our brick pavements are chiefly caused by failures of base and the wear in the brick themselves. Prior to 1900, the base for brick pavements was constructed with gravel or broken stone. Since that date, cement concrete has been used for the brick paving foundation. With few exceptions, sand has been used for cushions. Public utility cuts in pavements are restored by the company making the cuts, but permits must be secured for this work, thus giving us a record of the work performed, and the repaving is inspected by the city.

Methods of Repairing

In making repairs, defective paving is removed, the base repaired if necessary, the cushion reshaped, and the brick cleaned and relaid to proper grade and crown. Often brick which are worn on top can be turned over and relaid, and by varying the sand cushion a very good job is secured. For many years it has been our policy to salvage, clean and store old brick, where repaving work was in progress, for future use in maintenance work. Since many of the old brick are of discontinued sizes, we find them valuable in making repairs on streets which were paved with brick of similar size, although the brand or kind may have been different. It is thus possible to make a workmanlike job, properly "toothing" the brick and avoiding chipping and unsightly fitting. Where considerable variation in the cushion depth occurs, we have found that local limestone screenings make an ideal bedding or cushion course and give greater stability than is the case with bank or river sand.

No more paving is torn up in any one day than can be restored during that day. This results in some loss of efficiency, but is a convenience to the traveling public and well worth the extra cost, since barricading and red lighting are reduced to a minimum. Asphalt filler is now used exclusively in making repairs, although many of the streets were constructed with tar or cement fillers.

A few of our very old brick streets are so badly worn that repairs by the preceding method would be too expensive, so they are maintained by filling the holes and depressions with sheet asphalt. While this method temporarily improves the riding qualities of the pavement, it is very unsightly, to say the least, and can be justified only because of a lack of funds.

At the present time a number of old brick streets, upon which some of the brick are so badly worn as to be of no salvage value, are included in an extensive WPA program for re-laying the entire street, the necessary new brick to complete the work being furnished by the Federal Government.

Delays Costly

While our method of conducting maintenance work has proved successful, it is to be regretted that since 1931 only about one-third to one-fourth of the yardage has been repaired each year, as compared with the years 1930 and 1931, owing to lack or diversion of funds, and we sincerely hope that ways and means will be found to place this program back on its former thorough and complete basis.

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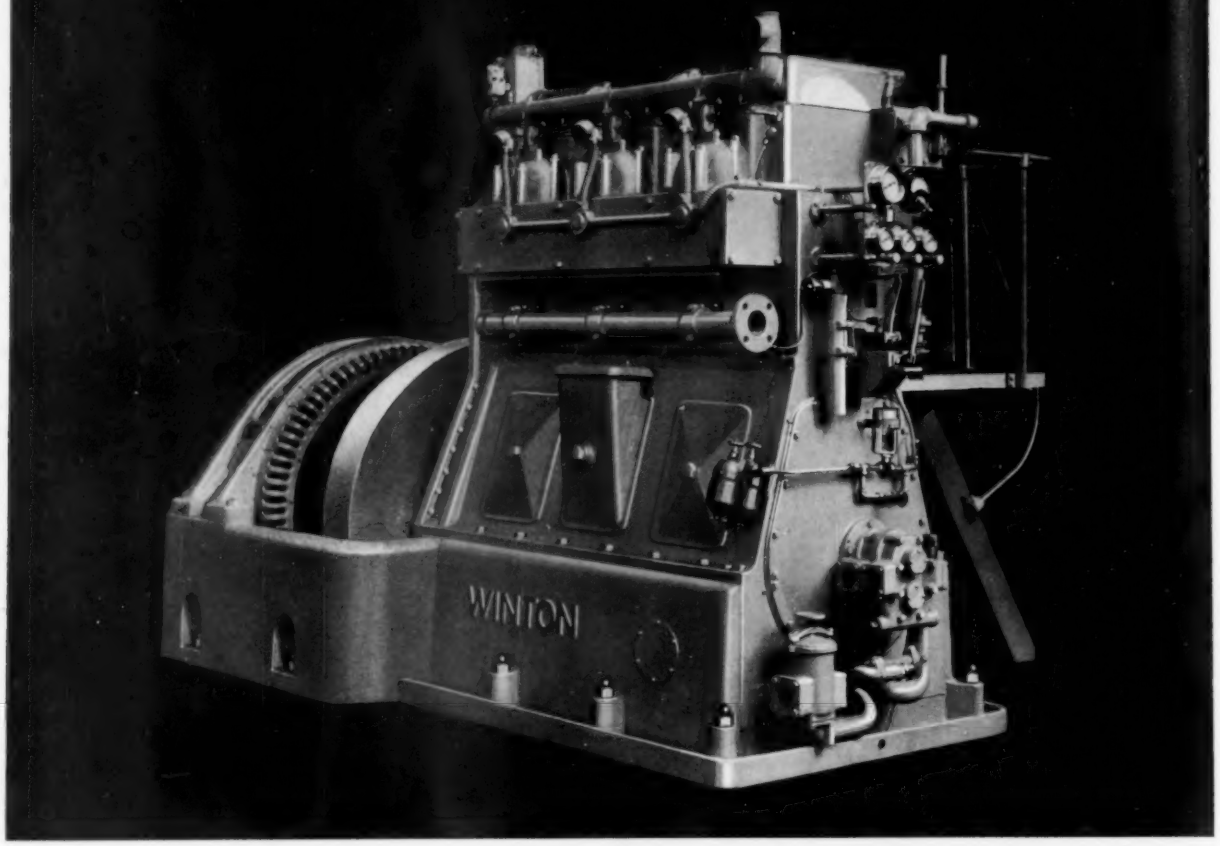

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Since each year adds traffic and wear on our streets, it is increasingly apparent that the old saying, "A stitch in time saves nine," certainly applies to street pavements.

Maintenance Records

Careful records of all streets under maintenance are kept on 6 x 9-inch cards. The front of the card carries a history of the improvement, such as the council proceedings, contractor, date of contract, date of completion, kind of material used, costs, width and length of roadway, square yards of pavement, etc. The reverse side of the card is reserved for maintenance costs and is ruled into seven columns, headed as follows: year; age; square yards repaired; cost; cost per square yard; square yard cost per year; and total cost to date.

Costs of each street repaired are kept according to the limits of the contract, and each foreman is furnished with a list of all contracts. Costs can thus be kept separately, though a single street may contain several separate contracts. Actual costs of labor and material used are kept, and at the end of the year the proper overhead costs are added. The same procedure is followed for all other types of pavement maintenance.

BRICK PAVEMENT COSTS

(The following table shows the maintenance cost record for brick pavements extending over the years 1924 to 1934 inclusive. At the present time figures for 1935 are not available; however, the volume of work, costs, etc., for the year will be approximately the same as for the year 1934).

Year	Total Cost	Total Sq. Yds. in Place	Total Maintenance Cost	Cost per Sq. Yd. of Repairs Made	Total Sq. Yds. Repairs Made	Per Sq. Yd. of Total Pavement
1924	$8,447,696.14	3,269,071	$86,376.07	$1.97	45,045	$.026
1925	8,839,896.81	3,760,154	135,602.72	1.82	74,329	.036
1926	8,855,036.66	3,746,111	127,843.25	1.91	66,915	.034
1927	9,234,990.23	3,770,400	118,656.84	1.88	63,142	.0315
1928	10,178,573.83	3,770,289	181,035.00	1.84	98,482	.048
1929	10,417,222.73	3,800,920	192,772.43	1.76	109,161	.051
1930	10,482,039.70	3,810,127	224,250.27	1.61	138,946	.059
1931	10,561,689.89	3,828,730	222,071.14	1.72	129,080	.058
1932	10,568,919.52	3,837,514	52,101.80	1.61	32,442	.014
1933	10,637,721.55	3,844,716	68,437.93	1.94	35,173	.018
1934	10,724,840.95	3,875,888	43,120.92	1.82	23,638	.011
			$132,024.40 Average	$1.80 Average		$.034 Average

This figure of 3½ cents per square yard would be reduced considerably if figured over the life of the improvements, as the following examples will show:

Oakland Park Avenue, High to Indianola, built in 1915—cost of maintenance to date is $2,056.09; per square yard per year, $.007.

Hoffman Avenue, Broad to Oak, built in 1887—cost of maintenance to date is $2,182.40; per square yard per year, $.017.

Franklin Avenue, Washington to Parsons, built in 1889—cost of maintenance to date is $1,801.19; per square yard per year, $.0085.

Streets with street-car tracks are much more expensive to maintain, as the following example will show:

Fourth Street, Goodale to Detroit, 20 years old—maintenance cost per square yard per year is $.039.

—From a paper presented at the Thirtieth Annual Meeting of the National Paving Brick Association.

Election Results on Public Ownership of Power Plants

THE Power Division of the Public Works Administration has reported to Administrator Harold L. Ickes that the actual election results from 132 communities in 32 states and the Territory of Alaska revealed that 82 per cent, or 112 communities, favored publicly owned electric power plants.

The balloting summarized consisted of regular local elections either on local policy proposals or bond propositions under which voters decided to assess themselves to get the benefits of a PWA power project. More than 494,675 ballots of regularly registered voters were cast in the elections summarized.

This survey, the Power Division stated, covered only those communities where the generating plant or general distribution system was not publicly owned at the time of the election and which had submitted applications to the Public Works Administration for loans and grants; 82 per cent, or 112 communities, were under 10,000 population, and 85 per cent of these were found favorable to public ownership.

The total number of all votes cast indicated that 59 per cent favored municipal ownership. Considering only communities unfavorable to municipal ownership, 57 per cent of the voters involved were opposed, and considering only communities where the result was favorable, 73 per cent of all voters favored public ownership.

The Power Division also said work on 62 projects in 26 states was delayed by litigation. To date, 74 projects have been completed. These are 65 electric projects and 9 gas projects for which the Public Works Administration allotted loans of $1,826,810 and grants of $2,336,513, making possible construction estimated to cost $9,579,084.

Great Lakes Exposition

THE city of Cleveland is celebrating its centennial this summer through the medium of a Great Lakes Exposition. From June 27 to October 4, 1936, Cleveland will be expecting visitors to her 100 acres of exhibits on the lake-front. Mayor Harold H. Burton is Honorary Chairman of the Exposition, and Lincoln G. Dickey, a specialist in entertainment work, is General Manager. The basic theme of the Exposition will be the Romance of Iron and Steel, heavy machinery and tool making, but the wide scope of the presentation will include representations of all phases of industrial, civic, business and social life. It will be a graphic display of the natural resources, industry, manufactures, horticultural and agricultural products of the Great Lakes states and will be divided into the following exhibits: iron and steel, machinery, electricity, transportation, pure foods and agriculture, horticulture, gas, office and business equipment, printing and graphic arts, and modern homes.

Cleveland, being the center of the lighting industry, both research and practice, of the entire country, is going to do itself proud in lighting its Exposition. Enough current will be used to light a city of about 50,000 people and will be distributed and balanced to show the colors of the buildings to best advantage and to light the way of the pedestrians without any direct glare. In addition to the Exposition grounds, Cleveland's downtown section will be specially lighted. (See p. 113.)

Cleveland's public hall and its stadium will be used for special events. The auditorium of the public hall will be the scene of continuous radio broadcasts featuring many of the well-known radio artists.

The United States Federal Government will have a special exhibit at the Great Lakes Exposition. There will be displays from the departments of State, Agriculture, Commerce, Labor, Interior, Navy, Army, Post Office, and the Smithsonian Institute.

Besides the more scientific aspects of the Exposition, there will be ample provision for pure amusement. Horticultural Gardens will be a point of interest and, also, a group of foreign villages to be known as "Streets of the World."

The manufacturer of this side-mounted bullgrader specializes in equipment for a special job. International supplies the power that makes it work—a Diesel TracTracTor.

International Industrial Tractors and Power Units are first-line equipment on all kinds of projects. Here is a grader powered by International Diesel.

Bank on International Industrial Power to Handle the Tough Jobs

International Harvester's long experience as a manufacturer of tractors and power units is the most reliable guide to follow when you need industrial power.

To get the real lowdown on International Industrial Tractors and Power Units, trust the men who have put this equipment through its paces. Then you will have a good idea of what International Power can do on your jobs. No matter how tough the work, if it's in International's power range you can expect the utmost in results. And, good as International performance is, it becomes all the better when the cost sheets are figured and you find out about economy.

The International line includes TracTracTors, wheel tractors, and power units, with gasoline and Diesel engines. The power units range in size from 12 to over 100 h. p., and there are light-duty engines from 1½ to 5 h. p. Keep this fact in mind also—no matter where your jobs are, International factory-standard service is close by to keep this equipment on the job. For detailed information, call on the nearby Company-owned branch or authorized industrial dealer.

INTERNATIONAL HARVESTER COMPANY
(INCORPORATED)
606 So. Michigan Avenue Chicago, Illinois

INTERNATIONAL HARVESTER

Why not remember to mention THE AMERICAN CITY?

Refuse Utilization in the Netherlands

By A. M. NOPPEN
Director of Public Cleansing, Amsterdam, Holland

THE flat, low country of the Netherlands, situated on the North Sea, is for the greater part very fertile. Consequently, besides carrying on trade and shipping, the population finds its principal existence in cattle-farming, agriculture and horticulture. In the course of centuries, the country was reclaimed from the sea, and this is the reason why large parts are below sea-level.

Refuse and Sewage Disposed of Together

In former years municipal refuse found a ready market as manure; moreover, different districts were reclaimed by means of it. As sewerage systems were still unknown in most towns, and feces had also to be collected, the fertilizing value of the domestic refuse could be enhanced by them. The mixing of domestic refuse with sewage was usually done in pits, in which the rotting process took place, so-called compost being formed. After artificial fertilizers had become known and were increasingly used, it became more difficult to find a regular market for refuse as manure. Meanwhile, most towns had been provided with sewerage systems, and sewage was no longer available to improve the fertilizing value of domestic refuse.

During the World War, which brought with it stagnation in the manufacture and transport of artificial fertilizers, the demand for natural fertilizers increased again, only to drop immediately when peace was concluded. Both large and small cities could not get rid of their refuse, and special measures had to be developed. It appeared that in normal circumstances agriculture could no longer be relied upon to take all of the refuse. Plans to rid the towns of their refuse were again studied, and different systems were applied according to local conditions. It is interesting to note that the quantity of refuse has shown a sharp increase. At present it amounts to 0.98-cubic yard per person per year on an average, and in the big cities 1.3 cubic yards has already been attained. Domestic refuse nowadays contains much more paper than formerly; its specific gravity is therefore low, varying between 0.25 and 0.35. Only in winter, when it freezes, does the specific gravity rise, through the increase of the ash-content.

Disposal by Filling Lakes and Raising Land

Even in the Netherlands it is difficult to find suitable places for dumping refuse into water without causing a nuisance. Just as a Swiss loves his mountains, a Dutchman loves his meadows. He values the beauty of his lakes and pools, and now that water-sport has become so popular, great care is taken that public waters are not polluted by waste products.

The waste products of towns like Haarlem (population 127,000), Leiden (population 72,000) and Utrecht (population 160,000) are still transported to pools. The cleansing services of these cities every day tip the collected domestic refuse into the barges of private contractors, who haul it out and discharge it. After the refuse has been dumped into shallow water, mostly reed-grown, it is covered with mud, which is dredged on the spot, creating the channel for the boats. The light domestic refuse is compressed by this top layer of mud and in time becomes fertile soil suitable for crops. Decomposition of the waste causes the whole layer to sink considerably after some time. In this manner, fertile tracts of ground are obtained, which are good for gardening. The demand for such grounds is but slight in the Netherlands just now.

Reclaiming Waste Grounds

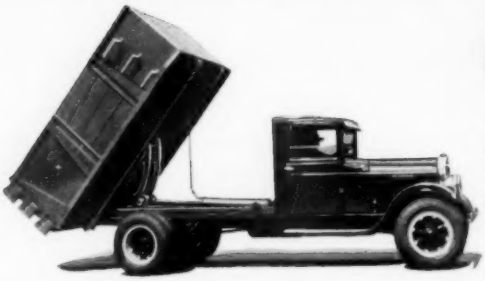
Formerly, municipal refuse found a ready market in agriculture, the sale of fertilizing matter sometimes actually being a source of revenue. This state of affairs belongs to the past. Hilversum (population 65,000) for some years past dumped its refuse in heaps outside the town, where it was allowed to rot for some time and then used to cover leveled sand plots to a depth of 14 inches and plowed under. The grounds are periodically treated in this way and thus converted into fertile fields on which clover, beetroot, potatoes, etc., are cultivated. The city of Hilversum has been expanding rapidly, and there is no longer sufficient space available for this method of disposing of refuse, so the city has recently purchased areas in another municipality.

Enschede (population 97,000) acquired 150 acres of marshy flatland, which has been prepared for dumping refuse. A connecting railway line 4 miles long has been built, and every day a gasoline locomotive hauls a train of dump-cars out to the dump. Domestic refuse is spread on the land in layers 20 inches thick and covered with a shallow layer of earth. The rails are constantly shifted to permit other strips of soil to be covered with refuse. The grounds are cultivated under the supervision of the Dutch Moorlands Society, and give a fairly satisfactory yield.

The Hague (population 469,000) utilizes its refuse for fertilizer. As there are no suitable lands nearby, the refuse is hauled to the province of Drenthe, a poor, sandy district in the eastern section of the country. A large transfer station was built in the center of the city at the gas works, where the refuse is dumped from motor vehicles direct into railroad cars. The railroad cars hold 143.9 cubic yards, or about 35 long tons. They are entirely closed, and are divided into four compartments by partitions. They are unloaded by opening pneumatically operated gates. Near Wyster, about 150 miles from the Hague in the province of Drenthe, a large receiving station has been built where the train enters a viaduct about 7 yards high. Here the whole train is unloaded in a few minutes by the engine-driver, the refuse piling up along both sides of the viaduct. In order to promote rotting, the refuse is sprayed with water from pipes attached to the viaduct. When rotting is completed, the material is loaded into wagons by a

GAR WOOD HOISTS AND BODIES

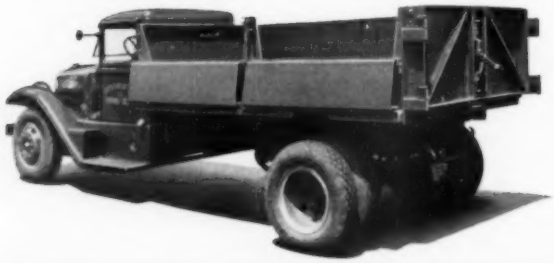
for RUBBISH COLLECTION



Left: Special rubbish body with lift-out sideboards. This body, with its barn door type tail-gate, is very effective for handling bulky trash and will speedily discharge large crates, old bed springs, etc. Capacity 10 cu. yds. Model F4C hoist.

5 cu. yd. rubbish body with hinged wooden extension sides and barn door type tail-gate which swings to either side. Model D6 for short w.b. trucks. Model F1CS for long w.b. trucks.

Below: Special rubbish body having capacity of 4 cu. yds. with 4 cu. yd. extension sides. Barn door type tail-gate, split in center and swinging to each side. Model F4C hoist.



for GARBAGE COLLECTION

Tarpaulin covered body with hinged steel extension sides and extra wooden sideboards. Barn door type tail-gate. Capacity, 14½ cu. yds. Model D66 twin cylinder hoist. Note low mounting.

Trailer dump body, 12 cu. yds. capacity. Model T33 telescopic hoist.

All-enclosed garbage body with sliding steel covers. Watertight tail-gate. Capacity 4½ cu. yds. to top of sides. Model F1C hoist.

GAR WOOD INDUSTRIES, INC.

DETROIT, MICHIGAN

WORLD'S LARGEST MANUFACTURER OF TRUCK EQUIPMENT

grab-bucket on a cableway and hauled to a building for screening. The material that passes the screen is sold as manure. Because of the presence of some metals, this material is suited to combat certain crop diseases. The large material which does not pass through the screens is deposited in the neighborhood and covered with sand.

Disposal in Incinerators

After domestic refuse had been treated as fuel in England for years, and several destructor plants had been installed in that country, the city of Rotterdam (population 594,000) erected a refuse destructor, in 1909. The plant, the first in the Netherlands, was built by Heenan and Froude on the left bank of the Meuse and put into use in 1912. It consists of five furnace blocks, each with eight incineration cells. At certain points in the town refuse is tipped into barges carrying iron containers and then towed to the incinerator dock. The containers full of refuse are run on an electric track over the furnaces, where the contents are dropped into a feeding funnel leading to two incineration cells. The contents fall into one of the ovens when a hydraulic slide is opened. Combustion is aided by a warm air draft through holes in the cast iron grates. The gases combine in the combustion chamber and are led through long flues to a tall brick chimney after passing through five Babcock and Wilcox boilers. Clinker is removed by hand, and slag is carried to an extinguishing apparatus to be de-ironed and broken.

About 10,000,000 kilowatt-hours of electricity per year is generated by the steam and is supplied to the town at a pre-arranged rate. The installation has been improved in recent years, notably with a vacuum dust suction device for carrying off red-hot ashes.

Amsterdam (population 778,000) built an incinerator in 1919, and Amersfoort (population 43,000) built an incinerator in 1933. Dordrecht (population 59,000) had a fairly primitive rubbish dump outside the town and has now decided to build an incinerator.

Dumping at Sea

Although many places in Holland are close to the sea, only one city has looked to the sea for the solution of its refuse-disposal problem. Fears are rightly entertained that the rubbish will be washed ashore on the coast of adjacent countries or return to the mother country. This would be detrimental to the watering places and fisheries. Den Helder (population 34,000), a port in the north of the Netherlands, has strong currents in the desired direction at set times. Tests have established the fact that floating objects cast into these sea-currents never reach land again.

A special craft was built with a wide belt conveyor on the deck. The crew of three take the ship out every day, and the skipper, who knows every whim of the sea, determines the point for dumping. When the desired point has been reached, the rectangular bow of the vessel is made free by two hand-winches and the belt conveyor is started by the ship's engine. The refuse is dropped off the head of the ship, unloading the cargo quickly.

From this brief survey it appears that in the Netherlands with its 8.5 million inhabitants, who produce 7.8 million cubic meters of refuse annually, different solutions of the disposal problem are possible. Rubbish is not welcome anywhere, and it is only natural that smaller communities seriously object to being used as dumping spots by neighboring cities. The Government is justified in protecting villages and in taking care that cities do not deposit anything improperly in rustic surroundings.

ACKNOWLEDGMENT.—From a paper presented at the International Conference on Public Cleansing, held at Frankfort, Germany, August, 1935.

How Best Could a Million-Dollar Gift Be Used for Community Betterment?

IF you had one million dollars to give to your community, how should you wish it spent?

A public-spirited millionaire in a Mid-Western city wants an answer to this question. He has asked the *Atlantic Monthly* to help him solve the problem, and has authorized the editors of that magazine to award a prize of $1,000 for a paper of not more than a thousand words containing the best suggestion or plan for the disposal of this million-dollar gift. The donor, who wishes to be anonymous, writes:

"I am a retired business man, spending the last years of a long life in the town (now city) where I was born and have continuously lived. In one respect I am fortunate—I am, measured by local standards certainly, wealthy. In another respect I am most unfortunate—I have no near relatives. This fact has complicated the problem of what I shall do with my money, and I have spent many hours pondering it. I have reached no conclusion which satisfied me. After providing for certan old friends and distant relatives, I shall have a million dollars to leave. To whom—for what good purpose—shall I leave it?

"The money was made in this community and I want it to go back to the community in some wise and beneficial manner. I shall attempt to describe the community as completely as I can without disclosing its identity. My city is close to 100,000 in population, is situated in the Middle West, surrounded by rich farm land. Although some sizable manufacturers are located here, we are not predominantly an industrial city. There is no large foreign population. Our growth has been slow and steady. I suppose we did not go quite so low in the depression as even the average American city; we did not fly quite so high in the "boom" days preceding. We have a good school system, good parks and playgrounds, swimming pools and golf courses, even a small art gallery. We have very adequate hospitals, well endowed. There is no local college or university. My problem of how best to dispose of my money is the more difficult because there is no single outstanding need which shows itself.

"Certainly I am not looking for a useless decorative memorial. A dozen purposes suggest themselves, but there is always the disconcerting suspicion that a better purpose, a wiser memorial, has been overlooked."

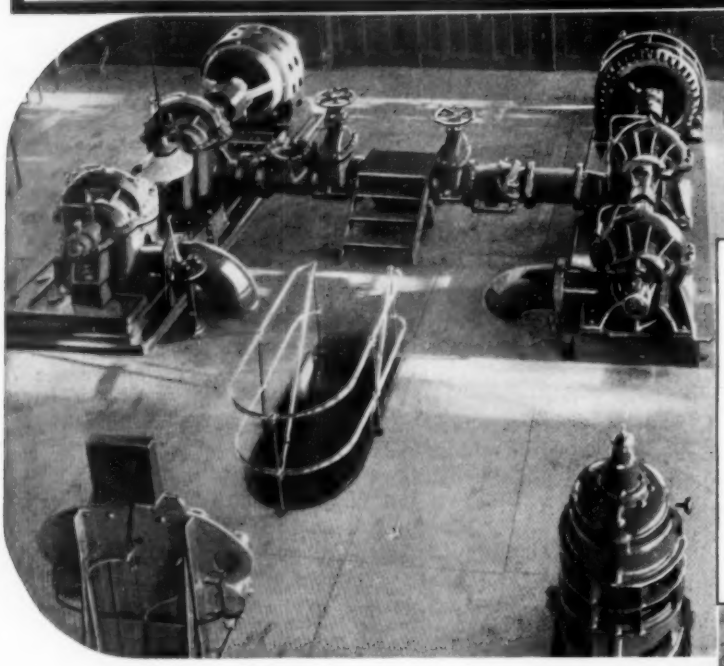
In its July issue, in announcing this award—for which some reader of THE AMERICAN CITY ought to have the prize-winning answer—the *Atlantic Monthly* says:

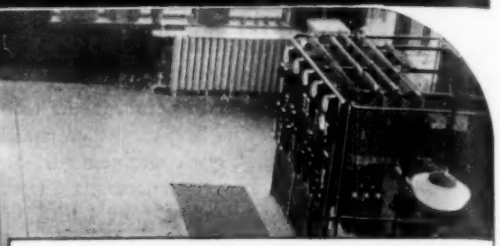
"The manuscripts will be judged by the editors, whose decision will be final. It is hoped that they will be typed, but those in *legible* handwriting will be acceptable.

"Manuscripts must be submitted to the *Atlantic Monthly*, 8 Arlington Street, Boston, on or before September 15, 1936. The prize-winning paper will be published in the magazine, if possible in the November issue. No employee of the *Atlantic* is eligible to compete.

"Contestants are limited to a single entry; each manuscript should bear on its envelope the inscription, *The Million Dollar Community Contest.* All manuscripts submitted will become the property of the donor."

STEUBENVILLE, OHIO
modernizes municipal waterworks with F-M Pumps





● The new F-M motor-driven centrifugal pumps at the left were recently installed to boost the delivery rate of Steubenville's municipal pumping plant. The first F-M pump unit installed is seen at the left.

In operation, the F-M motor-driven propeller pump in the foreground delivers water from the river to the two series-connected centrifugals, which force it to an elevated reservoir. These units replace an old vertical steam pumping unit.

SOME years ago, the city of Steubenville, Ohio replaced its old steam-driven pumps in the municipal waterworks with an F-M motor-driven centrifugal.

With increased demand for water, the time came when an additional pump was needed to deliver another 10 million gallons daily. And Steubenville bought Fairbanks-Morse equipment!

Repeat orders are a manufacturer's best evidence that his equipment is giving satisfaction. Steubenville, like many other municipalities, has found that F-M pumps deliver, and it has backed its experience with its order for more of the same kind.

For full information on F-M pumps for city water supply, address Department J91, Fairbanks, Morse & Co., 900 S. Wabash Avenue, Chicago, Ill. 34 branches at your service throughout the United States.

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106 YEARS OF PRECISION MANUFACTURING

FAIRBANKS-MORSE

Pumps

POWER, PUMPING AND WEIGHING EQUIPMENT

City Studies Water Revenue—Turns to Universal Metering

Manistique, Mich., Joins the 100 Per Centers

A SHORT time ago the city of Manistique purchased 1,200 water meters to complete the metering of all of its services. This was not a step in the dark, but was taken after the City Manager, P. H. Beauvais, had made a searching study of conditions in Manistique, and in other cities, which have all services metered. His report is presented herewith in outline, with some of the tables, which will be helpful to readers of THE AMERICAN CITY.

Pumpage

The first comparison presented in the report is the total number of gallons pumped each month in 1934 and 1935. This shows that in 1934 a total of 275,394,000 gallons was pumped, producing a gross revenue of $16,984.71, or an average of 6.16 cents per thousand gallons, resulting in a deficit of $2,322.52, or 0.84 cents per thousand gallons. In 1935 the pumpage increased to 284,103,000, but the gross revenue dropped to $15,967.09, or 5.62 cents per thousand gallons. The deficit for 1935 was $3,920.62.

Then a study was made of the number of gallons pumped each day for two months. April, 1935, and January, 1936, were chosen, the first being considered a normal consumption month when there is no danger of services freezing and it is too early in the season for grass fires and lawn sprinkling. Eliminating the 31st day of January in order to make the two months equal in number of days, there was an excess of 1,283,000 gallons pumped in January, 1936. This can be attributed to but one cause, leaving faucets open to prevent freezing during the extremely cold weather in January. When a service is not metered, there is no income from the water run to waste to prevent freezing.

Comparing Ten Michigan Cities

Table I from the report contains comparative data from ten Michigan cities of approximately the same size as Manistique. A study of the table shows a low daily total pumpage and consequent low per capita consumption where services are 100 per cent metered or nearly so. Comparison of these with the figures for Manistique and Hillsdale, the former city having no domestic meters and Hillsdale being only partially metered, proved an effective argument for 100 per cent metering in Manistique. The low consumption in Laurium, where the plant is privately owned, proved to be another effective argument for completing the metering of all domestic services.

The City Manager then made a careful check on the efficiency of the pumps in Manistique, the power consumed, and the total annual power cost, and from this the average cost to pump 1,000 gallons, which was shown to be 2.65 cents, or $26.50 per million gallons.

Raising the Necessary Revenue

Table II analyzes the annual revenue required to operate the Water Department. The amounts set up in this table are carefully reconciled estimates, based on similar costs in preceding years, with an allowance made, especially in the item of "Production Costs" for the lower pumpage, namely, 150,000,000 gallons per year, which would be required with universal metering. Consideration is given to the increased expenditure under "Distribution Maintenance" for the setting of meters, under "Commercial" for reading and billing meters, and under "Capital Outlay" for one-tenth of the estimated cost of meters, based on the assumption that the meters would have an initial life, with little or no maintenance for that length of time. This table was used as the basis for the proposed meter rates and charges which must offset the operating costs of the plant through the production of adequate revenue.

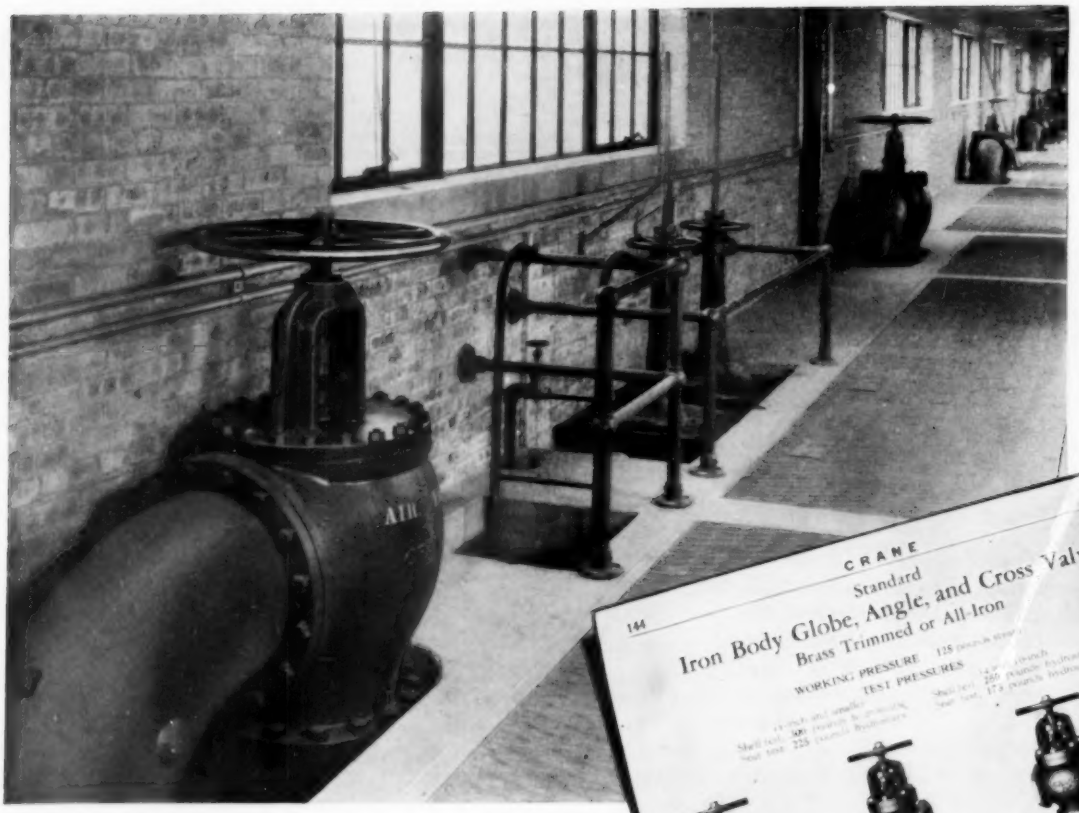
Hydrant Rental

The investment in mains and pumping equipment needed for fire protection is many times as great as that required where a plant furnishes water only for domestic, commercial and industrial consumption and, since fire protection is a property benefit, it should be paid for in proportion to the amount of property benefited. Consequently, in the table analyzing revenue required, allowance is made for this part of the cost of operation and maintenance of the plant from general taxation through a hydrant rental paid by the city from general funds to the Water Department. Since not all taxpayers are water consumers, or at least not in proportion to the benefits received by lower fire insurance rates, this item of fire protection from the Water Department should be paid for the same as the

TABLE I

WATER-WORKS DATA FROM MICHIGAN CITIES COMPARABLE TO MANISTIQUE

City	Population Served	Gallons Pumped Daily	Per Cap. Gals. Daily	No. of Services		Per Cent Metered		Rates		No. Fire	Rental Paid	Total Annual Rent
				Domestic	Indust.	Dom.	Indus.	Max. Dom.	Min. Indus.	Hydr.	Per Hydr.	from Taxes
Bessemer	5,000	158,000	32	750	28	99	100	.30	.25	98	55 35	5,424 30
Cheboygan	5,642	200,000	35	1,000	30	100	100	.25	.20	113	None	0
Hastings	5,132	375,000	73	1,640	30	85	100	.22	.13	85	"	0
Hillsdale	6,000	1,350,000	225	2,500	50	2	50	.05	.05	117	"	0
Kingsford	5,400	175,000	32	1,200	1	100	100	.25	.20	179	50 00	8,950 00
Manistique	6,000	780,000	156	1,200	9	0	100	.35	.05½	104	0	0
Gladstone	5,500	450,000	82	1,100	10	0	20	..	.05	67	22 80	1,527 60
Laurium	7,000	135,000	19	1,920	3	100	100	.37	.25	40	0	0
Marshall	4,270	.....	..	2,770	..	85	..	.20	.08	138	16 00	2,208 60
Mt. Pleasant	5,000	500,000	100	1,400	4	91	100	.40	.11	148	45 00	6,660 00
Petoskey	6,000	800,000	133	1,500	30	100	100	.28	..	101	..	..
So. Haven	5,500	530,000	96	1,630	..	100	..	.25	.13	142	40 00	5,680 00
Wayne	5,500	500,000	91	1,100	7	91	100	.20	.12	20	25 00	500 00



Crane 16-inch No. 353 Angle Valves in large sewage disposal plant

Built for

MINIMUM MAINTENANCE

When you standardize on Crane valves you make an investment in design, ruggedness and craftsmanship that pays real dividends in reduced maintenance.

This materially reduces operating costs and contributes to that dependability which is so essential in waterworks, filtration, sewage disposal and irrigation services.

Consider the Crane No. 353 Angle Valve, for example. It is sturdily built and strongly reinforced against wear at every vulnerable point. Renewable body seats, swivel-type regrinding discs and outside stem threads reduce maintenance to a minimum. The workmanship is the kind you can expect to find only in Crane valves.

Check purchase costs against valve and fitting maintenance costs and you will find Crane valves and fittings economical. There is a Crane branch or distributor in your city fully stocked and well manned to insure prompt, intelligent service and co-operation.

CRANE

CRANE CO., GENERAL OFFICES: 836 SOUTH MICHIGAN AVENUE, CHICAGO, ILL. • 321 EAST THIRD STREET, LOS ANGELES, CALIFORNIA

Branches and Sales Offices in One Hundred and Sixty Cities

VALVES, FITTINGS, FABRICATED PIPE, PUMPS, HEATING AND PLUMBING MATERIAL

Why not remember to mention THE AMERICAN CITY?

maintenance of the Fire Department for its services.

Meter Rates

The two tables in the next column show the meter rates which apply to all industrial consumption and a few commercial consumers, and the new rates which are now in effect. It will be noted that the maximum of the old rates is higher and the minimum much lower than the adopted rates. The actual cost of pumping and delivering water to a consumer was figured as 0.074 cents per thousand gallons. It is obvious to any business man that water cannot be sold under that figure without a loss to the Water Department.

TABLE II
ANALYSIS OF REVENUE REQUIRED

Production Cost	(Based on 150,000,000 Gals. Yearly)
Superintendent, labor, pumping expense and water treatment	$8,300.00
Supply Maintenance	
Dam, intake, wells, pumps	200.00
Distribution Maintenance	
Super. and labor, setting meters, supplies and expense	1,800.00
General Maintenance	
Buildings, tank, mains, services, hydrants, fountains, misc	2,500.00
Commercial	
Consumers account, collecting, reading meters and billing	1,500.00
General Administration	
Office supplies, auto supplies and repairs, insurance, fuel, misc	600.00
Capital Outlay	
Meters and parts (1–10 of $10,000)	1,000.00
Retirement Reserve	
2% on $158,615.00	3,172.30
Bond and interest	9,170.00
Total operating expense	$28,242.30
Less hydrant rental (104 at $50 each proposed)	5,200.00
Balance to be raised by revenue	$23,042.30

Assumed Revenue

The table below is a summary of the revenue which it was reasonably assumed could be derived from the actual number of services, domestic, commercial and industrial, active within the city and without any consideration being given to probable additional services or to those then active which might be shut off later. It was assumed that these would balance each other.

A more or less accurate check of the estimated number of taps and services in each step group for both domestic and commercial types of service was obtained from the consumers ledger, and there was an absolute check on the consumption for industrial purposes, as they were 100 per cent metered already. It will be noticed from this table that the gross revenue, based on the proposed water rates and assuming that 80 per cent of the water pumped produces revenue, is very little in excess of the required amount, $23,042.30, under the "Analysis of Revenue Required."

OLD METER RATES
(Four periods per year)

		Per Month	Rate
First	5,000 gals. per quarter	1,666	35 per 1,000 gals.
Next	20,000 " " "	6,666	10 " " "
"	75,000 " " "	25,000	08 " " "
From	100,000 to 200,000 " " "	16,666	07 " " "
"	200,000 to 300,000 " " "	25,000	06½ " " "
"	300,000 to 400,000 " " "	33,333	06 " " "
All over	400,000 gals. per quarter		05½ " " "

NEW RATES
(Three periods per year)

		Per Month	Rate
First	8,900 gals. per period	2,225	30 per 1,000 gals.
Next	11,100 " " "	2,500	25 " " "
"	10,000 " " "	2,500	15 " " "
"	270,000 " " "	67,500	10 " " "
All over	300,000 " " "	75,000	08 " " "

The Cost of Paying Deficits Out of Taxes

The deficit for 1935 was estimated as $3,921 in the report. The bond payment due in 1936 is $5,000, and the interest payment, $4,170, making a total of $13,091 which would have to be appropriated in 1936 by the city to continue the operation of the water-works plant and pay its indebtedness and the carrying charges on that indebtedness from the tax levy.

The annual tax levy is about $54,000, and if $13,091 of this be paid for the Water Department it amounts approximately to 24 per cent of the entire tax levy. The report then assumes a case of a piece of property which is assessed at $2,000. Applying the 1935 tax rate of $14.63 per $1,000 valuation, we find that this piece of property must pay $7.00 out of taxes to support the water plant.

ESTIMATE OF REVENUE FROM NEW METER RATES

No. of Taps	Gals. Allowed Per Mo.	Cost Per Month	Cost Per Year	Gallons Allowed Per Quarter	Gallons Allowed Per Year	Rate per 1,000 Gals.	Est. Total Annual Use, Gals.	Est. Total Income
DOMESTIC								
1,058	2,225	$2.67	$8.00	8,900	26,700	$ .30	28,249	$8,464 min.
700	2,775	2.78	8.33	11,100	33,300	.25	23,310	5,831
250	2,500	1.50	4.50	10,000	30,000	.15	7,500	1,125
Totals	7,500	6.95	20.83	30,000	90,000		59,059	$15,420
COMMERCIAL					30,000	.30		
200	5,000	5.50	16.50	20,000	30,000	.25	12,000	3,360 min.
100	2,500	1.50	4.50	10,000	30,000	.15	3,000	450
100	5,000	2.00	6.00	20,000	60,000	.10	6,000	600
50	12,500	5.00	15.00	50,000	150,000	.10	7,500	750
Totals	25,000	14.00	42.00	100,000	300,000		28,500	$5,100
INDUSTRIAL					30,000	.30		
					30,000	.25		
10	7,500	7.00	21.00	30,000	30,000	.15	900	210 min.
10	67,500	27.00	81.00	270,000	810,000	.10	8,100	810
4	25,000	8.00	24.00	100,000	300,000	.08	1,200	96
2	25,000	8.00	24.00	100,000	300,000	.08	600	48
Totals	125,000	50.00	150.00	500,000	1,500,000		10,800	$1,164

TOTALS

Domestic revenue	59,059,000	gals.	$15,420
Commercial revenue	28,500,000	"	5,100
Industrial revenue	10,800,000	"	1,164
Total revenue	98,359,000	"	21,684
Est. yearly pumpage	150,000,000	"	
Est. 20% net revenue	30,000,000	"	
Balance for revenue	120,000,000	"	
Est. revenue, pumpage	98,359,000	"	
Balance available for revenue	21,641,000	"	1,731.28
	at .08 per 1,000		$23,415.28

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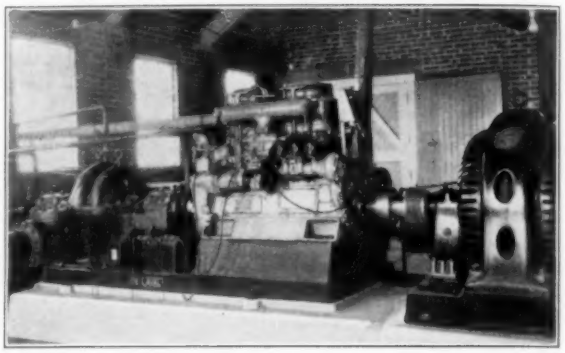

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Water Rates Applied to a Specific Tap

Selecting tap No. 1573, the City Manager shows the actual cost of water under the new meter rates. This tap furnished water to a family of nine and they maintained a vegetable garden and a lawn larger than the average. The yearly consumption in Manistique reduces to an average of 17 gallons per capita daily. The cost of water to this family would be $1.50 per year for meter rentals, and $14.57 for water actually used, making a total of $16.07 for water for domestic use and sprinkling for a family of nine for one year.

We are happy to say that the new rates were adopted after the report was considered carefully, and that Manistique has now taken its place among the 100 per cent metered cities in the United States. Complete satisfaction has been generally expressed.

Financing Sewerage Service Outside City Limits

Packing Plant and Others Pay Equitable Rates in Oklahoma City

WHEN the packing houses were located in Oklahoma City twenty-five years ago, one of the conditions was that the city provide sewer connections, and another was that the packing plants should not be taken into the city limits for a period of ten years. This period was extended from time to time, and after the State Health Department ordered the city to provide treatment for its sewage, some years ago, efforts were made to induce the packing plants to come into the city limits and pay their part of the expense of sewage treatment.

About two years ago negotiations were opened between the city and the packing plants aiming to have the plants pay a part of the cost of treating the sewage and also of rebuilding the intercepting sewer connecting with the packing houses and the sewage-treatment plant, which is in a badly deteriorated condition as a result of the attack of hydrogen sulphide.

Sewer Rental Considered

At about the same time the possibility of assessing a sewerage service or rental charge attracted considerable attention, and the Water Department prepared a report outlining a plan of sewerage service charges which would finance the construction of necessary sewerage improvements as well as pay for the operation of the treatment plant. Difficulties in the way of legislation prevented putting this into effect. However, about one year ago it was decided to assess a sewerage service or rental charge against all users of the city sewerage system who were located outside the city limits, since it was considered desirable to furnish such people with sewerage service and also advisable to require them to pay for it.

Use of the Dayton plan was considered first, but owing to the fact that so few of the users of the sewerage system outside the city limits used the city water, it was necessary to provide for some other method of assessing charges, and as a result the basis outlined in the following extract from the City Sewerage Ordinance was decided upon:

"For any dwelling, duplex or apartment house used strictly for residential purposes and/or the accessory buildings used in connection therewith, the charges, rentals or rates shall be made upon the following basis: A minimum charge of 60 cents per month shall be made to include not to exceed four fixture drain outlets to the sewer, plus 15 cents per month for each additional fixture drain outlet. Such charge shall be paid quarter-annually and be payable in advance on January 1, April 1, July 1 and October 1.

"(2) For all other properties, whether used for commercial or industrial purposes or otherwise, the rates, charges or rentals shall be based upon the quantity of water used thereon or therein as the same is measured by a water meter therein used, which meter shall be subject to the approval of the Superintendent of the Water Department, and the following shall be the schedule of rates, charges, or rentals which shall be payable monthly on the 10th day of each month and cover the calendar month immediately preceding:

For first 100,000 gals. of water used per month, per 1,000 gals.	$ .06
For all over 100,000 gals., and less than 5,000,000 gals. used per month, per 1,000 gals.	.05
For all over 5,000,000 gals. used per month, per 1,000 gals.	.03 1/3

"A minimum charge of 60 cents per month for not to exceed four fixture drain outlets to sewer, plus 15 cents per month for each additional fixture drain outlet, shall be paid. When the amount of water used exceeds the minimum charge fixed for the number of fixture drain outlets, then the charge shall be computed on the basis of the water used. When the water used amounts to 30,000 gallons per month, or if in excess of twelve fixture drain outlets to sewers are used, the minimum charge per fixture drain outlet shall be disregarded and the charges will, in such cases, be based upon the amount of water used, except that there shall be a minimum charge of $1.80 per month in such cases."

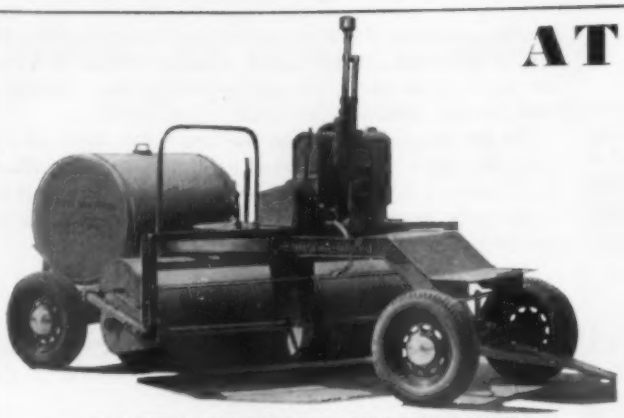
Compromise

It was felt that this scale of charges would result in the packers' paying their proportionate share for sewage treatment, based upon the character of their sewage as measured by the suspended solids it contained, as well as the volume. However, a compromise was finally reached by which the packers agreed to pay for their proportionate cost of the sewage treatment on a volume basis without regard to the character of the sewage, and the following scale of charges was decided upon, which also apply to all other consumers whose rates are figured on a water consumed basis.

For first 100,000 gals. of water used per month, per 1,000 gals.	$ .06
For all over 100,000 gals., and less than 5,000,000 gals. used per month, per 1,000 gals.	.03
For all over 5,000,000 gals., used per month, per 1,000 gals.	.01

The packers have installed a meter approved by the Superintendent of the Water Department to measure the volume of their sewage. This privilege is provided for in the ordinance. This is a step in the right direction, but it remains to be seen how it will work out. The five-year contract made with the packers provides for a revision of the rates with an increased cost of treatment which, it is expected, will take place with the complete development of the sewage-treatment facilities of the city.

—THE AMERICAN CITY is indebted to T. C. Banks, Superintendent and Engineer, Oklahoma City Water Department, for the information contained in this article.



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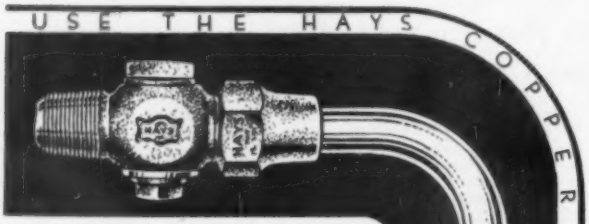

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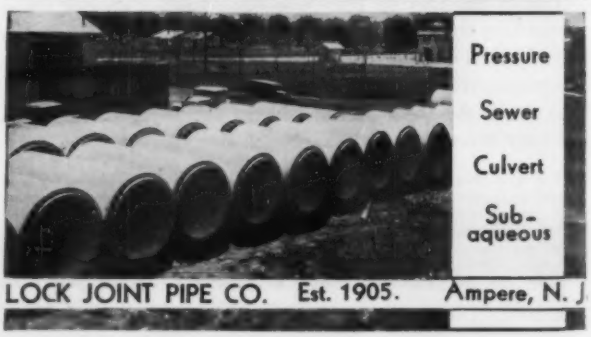

LOCK JOINT PIPE CO. Est. 1905. Ampere, N. J.

Promoting PWA Water-Supply Projects

Efforts of The Cast Iron Pipe Trade Recovery Committee Most Effective in Arkansas

BEFORE PWA had been created by Congress, but was practically a certainty, the RFC was the only agency from which towns and cities might borrow funds to finance new projects, or extend and improve existing ones. The law creating the RFC permitted it solely to loan money at a stipulated rate of interest, without gifts or grants. This made the funds of the RFC available only to the larger cities, for without assistance from the Federal Government the smaller towns could not show their projects to be self-liquidating. With the idea of creating an immediate employment program, Congress in June, 1933, passed the Federal Emergency Act, thus creating the PWA. Under this Act cities and towns were permitted to borrow the necessary funds to construct new projects and improve existing ones, the PWA donating 30 per cent of the cost of labor and materials as a grant, the remainder of the loans to be secured by the purchase of the borrower's bonds, the interest rate to be 4 per cent. The borrower was privileged, of course, to dispose of these bonds privately and secure the grant only.

In the early summer of 1933, The Cast Iron Pipe Research Association voted to create a committee to be known as The Cast Iron Pipe Trade Recovery Committee. Its object was to assist in the promotion of water-works systems to be financed by Federal Government loans and grants. A central office was opened in Washington, D. C., with branch offices in Birmingham, Ala., and Dallas, Texas. Later, offices were opened in other sections of the country. The Committee consisted of a Chairman, his co-chairman and field men traveling out of the branch offices.

Arkansas a Fertile Field

Arkansas was selected as one of the states in which to begin immediate promotional work. The selection was made for several reasons. First, the Arkansas Legislature, sensing a dire need, had recently passed two enabling acts, one a Water Revenue Bond Act, the other a Sewer Revenue Bond Act, both of which were later declared constitutional by the Supreme Court of Arkansas, the legal expense in connection with a friendly suit being partially borne by the Trade Recovery Committee. Second, there was a wide field for new water-works systems, as well as extensions to existing systems. Third, much promotional work had previously been done in several towns and cities by consulting engineers with a view to building new systems and improving old ones, under a then existing Improvement District Law.

This venture, on the part of the Cast Iron Pipe Research Association, was an innovation, to say the least, and the Committee found it necessary to start from scratch, so to speak. One of the first things done was to determine how small a city or town could be successfully promoted and the project shown to be self-liquidating. Much valuable advice was received from consulting engineers, public utilities, and officials of towns and cities already operating plants, covering per capita costs and revenues. The findings seemed to indicate that the best field would be in towns between 600 and 1,000 population, although it was later found out that towns even smaller than 600 would show a self-liquidating system, particularly if a source of pure water was available from wells nearby and the cost of supply lines and purification plants could be avoided.

Cooperative Effort

An accurate list of prospects was compiled, the Committee receiving full cooperation from several sources. The Arkansas Fire Prevention Bureau furnished a list of all cities and towns in the state and their ratings, so that the Committee could immediately determine just which cities and towns had complete domestic and fire protection systems, domestic systems and part fire protection, and domestic systems only, and which cities and towns had no systems whatever. The State Board of Health furnished information as to sources of pure water supply. All the consulting engineers in the state made available their files of prospects on whom they had previously worked. The Committee then made contact with the General Agents of all railroads operating in the state and furnished them with a supply of questionnaires which they in turn sent to their local agents. The questionnaires called for the name of the Mayor, or the Chairman of the Board, the name of the City or Town Counsel, and a list of prominent and public-spirited citizens. The questionnaires also requested information as to whether the town or city was interested in securing a Federal loan with which to build a water-works system, and whether it would care to have further information. The General Agents followed up these questionnaires until practically every one was returned, containing much valuable information. From all these sources a list of prospects was compiled, and copies were furnished to all interested consulting engineers.

Pushing PWA

When the PWA began to function, a bulletin was prepared by the Committee and sent to all interested cities and towns, setting out in detail the advantages of financing pure domestic water supplies giving fire protection with lowered insurance rates and affording added protection to health, as well as property and industrial water supplies, to attract new industries through PWA loans at low interest rates and grants of 30 per cent of the cost of labor and materials (later increased to 45 per cent). By financing through revenue bonds secured by the revenue from the sale of water only, and a first mortgage against the plant which the Government was willing to loan money to build, the work required no increased taxation. Under the Revenue Bond Act these bonds will never become a general obligation.

Mass Meetings

The bulletins also offered the assistance of the Committee in holding mass meetings, or furnishing any further information desired. Immediate response to the bulletins

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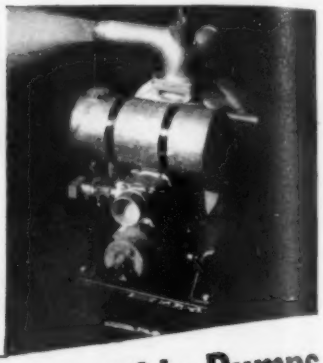

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Homelite pumps are self-priming—no foot valves are necessary. They handle thick, muddy water—have 28 feet suction lift—start instantly and are completely troubleproof.

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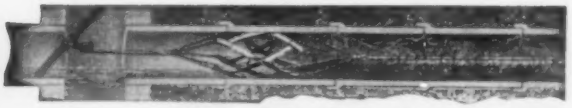

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HYDRO-TITE

came in the form of requests for further information and for field men to assist the officials in holding mass meetings. To avoid unnecessary traveling, the requests were grouped so as to handle as many prospects in one particular section as possible. The mass meetings were probably the most interesting part of the work, unless it was scanning the PWA releases to find whether this or that project was approved.

The method pursued in holding the mass meetings was, first, to set a date and hour, then to have the officials post a notice inviting the entire population to attend. The field men always had a consulting engineer attend the mass meetings with them, if possible, to answer any questions on engineering problems that might arise, for the Recovery Committee never attempted to carry any prospect beyond the promotion stage. As soon as sufficient interest had been aroused to insure the making of application the Committee stepped out of the picture, and turned the remainder of the work over to reputable and capable consulting engineers. The meetings were held in town halls, Legion huts, church cellars, feed stores, and many times right out in the streets, when the weather became too unbearably hot inside, or the ticks too pestiferous in the feed store. The meetings were opened by a short introduction and explanation of the purpose of the meeting, usually by the Mayor or some prominent citizen of the town. The Committee representatives then explained as briefly and concisely as possible the PWA offer to finance self-liquidating projects, and always tried to get the citizens in a question-asking mood as soon as possible. Objections were expected and seldom failed to appear. One of the first questions invariably asked was, "How much will it increase our taxes?" After explaining that the water revenue bonds never increased taxes, that, unlike general obligation bonds, they were retired sorely through the sale of water, most of the serious objectors were usually satisfied. Several times objectors were found who had piped water from their wells to some of their neighbors and did not feel very kindly about giving up this monthly revenue. To offset this, however, there were many cases of citizens paying as high as $3 per month to have water hauled to their homes from springs; and, of course, there were always some who thought that if wells were good enough for the past 100 years, they were good enough now. However, the majority of the citizens were favorable after the plan had been fully explained to them. Fire protection and lower insurance rates were always stressed, as were purer water and lower doctor bills, and, instead of a scarce supply of water from wells polluted by drainage from cesspools, an abundant supply of water to attract new industry.

Rates Suggested and Subscribers Sought

The Committee had previously determined that in all but unusual cases a charge of $2 per month for the first 3,000 gallons of water, with an additional charge of 20 cents per 1,000 gallons excess, would liquidate most plants, with the aid of the grant and low interest rate on the revenue bonds, provided a reasonable number of subscribers agreed to take water. In towns of 600 to 800 population, from 100 to 120 subscribers to start off the system seemed to be the necessary number, and the experience of towns and cities, as well as public utilities, indicated clearly that an increase of 20 to 25 per cent could be normally expected in the number of subscribers during the first five years the system was in operation.

Since revenue bonds are not voted by the people, some poll of the citizens was essential to indicate to the town officials as well as to the PWA the sentiment of the population toward applying for one of the Government loans.

The Cast Iron Pipe Trade Recovery Committee prepared subscription lists taking the form of an appeal to the city or town officials to pass the necessary ordinance and to submit an application to the PWA for a loan and a grant with which to construct a complete water-works and fire-protection system. These subscription lists embodied an agreement on the part of the signers to take water from the system at a set rate per month, usually the amount stated above. No effort was made to stipulate any particular length of time the signers would agree to take water from the system, for the Committee well knew that, once a family had a pure supply of running water piped into their home, they would give up every other convenience before they would give up their water supply.

When all questions had been satisfactorily answered at the mass meetings, and the majority of those present seemed in favor of applying for a loan, the subscription lists were passed around for signatures, and as many as 60 signatures were secured at some meetings. The lists were then usually turned over to a local committee to secure the remaining signatures needed. In only a few cases was it necessary to hold more than one meeting, although at times preliminary meetings were held with the town officials and prominent citizens before endeavoring to hold a mass meeting, and at these meetings any known objectors would be called in.

The Committee also prepared a model ordinance for the Council to pass authorizing the application for these loans and grants, and it was not unusual, if sentiment was favorable, for the Council to meet in executive session after the mass meeting, pass the ordinance on first reading and arrange to publish it as required by law, and also to enter into a contract with some consulting engineer to prepare the application.

Assistance to State Organization

When the state PWA organization had been set up, the Recovery Committee submitted a model application to it, which, after being reviewed and revamped somewhat, was sent to all consulting engineers and others who applied for it.

As all borrowers were offering water revenue bonds as security, the required legal opinion would necessarily be very similar in all cases, so a model legal opinion was prepared to be used as a guide by attorneys retained by the borrowers, the one thought being to have all applications submitted to the PWA in such shape that they could be more readily reviewed to see whether the Government requirements had been complied with.

In all its work the Recovery Committee enjoyed the complete cooperation of the state PWA organization. As a result of the combined untiring efforts of all concerned, including the state PWA officials, the town officials and public-spirited citizens, the State Board of Health, the Fire Prevention Bureau, and consulting engineers, 78 applications were submitted to the PWA in Arkansas, and 62 of these applications were approved.

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"Play Street—No Through Traffic"

CHICAGO, ILL.—Where there is no other place for baseball, duck-on-the rock or hopscotch, children play in streets despite parental admonishments. And, unhappily, the supervised play areas are found always in the crowded tenement districts of large cities, where play room is most needed. In Chicago recently, the *Daily Times*, in cooperation with the Chicago Motor Club, put over a plan by which children are allowed to play in streets, unworried by on-rushing autos.

Back in September, 1935, results were published of a survey of little-used Chicago streets by George Barton, Traffic Engineer of the Chicago Motor Club. Twenty-five streets were found in which traffic was almost negligible and near which there were no playgrounds.

"Why not rope off these streets for children?" suggested Irving Yergin, *Times* writer. "Baseball diamonds could be painted on the pavement, and hopscotch gridirons laid out."

On March 2, 1936, the City Council passed an ordinance, sponsored by Alderman Bryan Hartnett, which set aside these streets for play purposes. On March 29, nearly 500 cheering youngsters came to the opening of the first of the playgrounds on the street. The street thenceforth became the congregating center of the community's youth. As there is less than 8 feet on either side of the barriers at each end, vehicles must come to a nearly complete stop before entering the street. Only vehicles that have business in the block are permitted to enter.

Civic organizations have endorsed the idea in hope of cutting down the toll of child auto fatalities, especially during the summer months.

LOUIS RUPPEL,
Daily Times, Chicago, Ill.

Photograph by courtesy of Daily Times, Chicago

A CHICAGO "PLAY STREET," SHOWING BARRIERS CLOSING IT TO PUBLIC USE

These Women Entered Politics for a Definite Civic Purpose

STEPHENSON, MICH.—The women of Stephenson, a town of 700 population near the Wisconsin-Michigan border, have proved that they are competent as duly elected officials sworn to improve the conditions of their community to the best of their ability.

Back in the boom days of 1929 the women of this town found that the men in office did not want to cooperate with them in putting through some worthwhile civic and community improvements, among these a fine village park. They decided that the only way to accomplish their purpose was to elect women favorable to their program.

They entered politics, so to speak, and were so successful that after the election women occupied all the offices in the village. The new officials were not slow to put through their community improvement program.

This program called for the creation of a fine, well-kept park in the center of the village. This was done. The town had no fire siren; an old bell gave duty inadequately. It was not long before the women had a new siren atop the firehouse.

The village had no official refuse dump; tin cans, glass, rubbish of all sorts, littered practically every alley and side street and vacant lot. The women acquired a village dump and inaugurated a village-wide clean-up campaign. The people responded enthusiastically. Today Stephenson is one of the cleanest little towns in this section of the country, and the annual clean-up campaign is very successful.

The streets also needed improvements, and water mains were essential for fire protection. The women officials, cooperating with local groups, got this work done speedily. The village hall was greatly in need of repair. The women put it in first-class condition.

When they came into office, the women found the village treasury in sad condition. During depression years, however, the budget was balanced regularly, and considerable money was contributed toward various relief projects. In a few years a comfortable cash balance was built up.

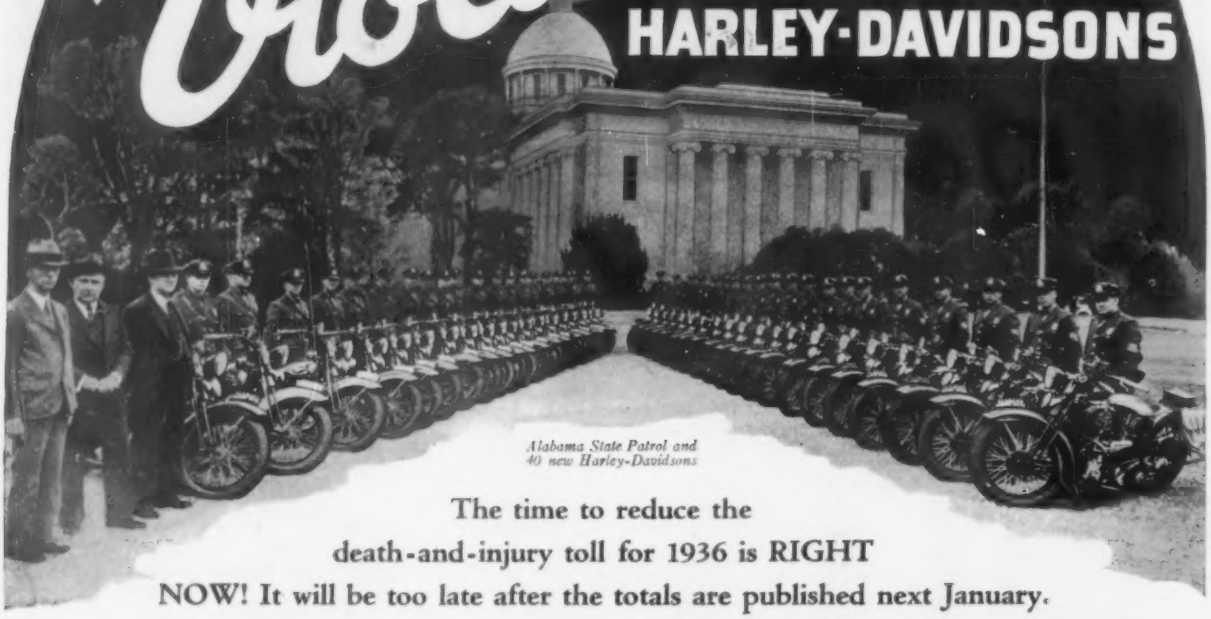
Now, in 1936, the women have retired from office—all of them—because there appear to be no more "worlds to conquer," at least immediately. Every point of their program has been accomplished, and the town has been improved considerably. Since the men have been given a lesson in responsibility, the women will not enter into politics again, unless the men backslide, which is quite unlikely. By their own choice these women are going out of office; they say they entered politics to further community projects, not merely to be office-holders. If other community projects need their support, they may take the field again, headed by Mrs. Grace Sanders, who was six times Village President.

MARTIN FRANCIS.

Publicity for Housing

BOSTON, MASS.—To offset the flood of non-factual and biased criticism, both favorable and unfavorable, of governmental activity in the field of housing that has appeared in the daily press, a group of interested persons in Boston have organized an informal "Housing Publicity Group." The purpose is to present factual information through the medium of the press as to the need, possible methods and expected results of a housing program administered by agen-

STAMP OUT TRAFFIC LAW *Violators* WITH HARLEY-DAVIDSONS



Alabama State Patrol and 40 new Harley-Davidsons

The time to reduce the death-and-injury toll for 1936 is RIGHT NOW! It will be too late after the totals are published next January.

Remember — *proper patrols prevent* violators from getting by with their vicious driving habits. Clamp down on 'em and clamp down hard! Mount YOUR officers on Harley-Davidsons — for complete and effective traffic control. The 74 Twin and 80 Twin Police models have everything a motorcycle must have for police work — pick-up, speed, flexibility and ease of handling. When radio equipped they add perfect central control, thus providing *everything* needed for stamping out all types of law-breakers.

Phone your nearby Harley-Davidson Dealer now — or write us for special police literature.

HARLEY-DAVIDSON MOTOR CO. *Dept. M* Milwaukee, Wis.

HARLEY-DAVIDSON
The Police Motorcycle

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cies of the municipal, state and Federal governments.

To insure fairness to all as well as to foster confidence of the public in the releases issued, the membership of the "Group" includes real estate operators, architects, lawyers and social workers as well as individuals having no direct commercial or financial interest in housing. There are ten members at present and their function is to check carefully all releases before publication to insure against the inclusion of unfair, prejudicial and discriminating statements.

Releases of approximately 550 words have been prepared twice each week since February 1, 1936, by two of the members acting as the Editing Committee. Special releases have been written from time to time by members especially qualified in a particular field. The routine work of typing, mimeographing and mailing has been assumed voluntarily by the Housing Association of Metropolitan Boston with the Executive Director acting as final editor to carry out at his discretion suggestions of other members of the group as to desirable changes.

Whenever practicable, the subject of the release is associated with some matter of current local news interest. Lacking such "leads," various aspects of housing are considered, such as planning, types of dwellings, management, community responsibility and others. Quotations from reliable sources and recognized authorities are used freely. The aim is to avoid as far as possible personal opinions of the writers.

The results of this publicity program have been encouraging. Five Boston papers have cooperated by using the releases as (1) news items in themselves, (2) the basis for editorials, (3) the basis for special articles. Slightly less than one-half of the releases issued have been printed in whole or in part.

Comments from other cities in the country have led to the consideration of a similar program on a national scale. Members of the Boston group believe that much can be done to arouse interest and clear thinking on the part of the general public through this medium.

CALVIN H. YUILL,
Executive Director, Housing Association of Metropolitan Boston, Inc.

San Jose Has a New Municipal Auditorium

SAN JOSE, CALIF.—Filling a long-felt need in San Jose, a new Municipal Auditorium located one block from the center of the business district was dedicated April 14, 1936. The structure, of California mission design, contains a main hall seating 3,330, a little theater for 600, a lecture room with a capacity of 400, and additional conference and exhibit rooms, as well as a kitchen.

Construction was prompted by the gift of $115,000 worth of property adjoining the city plaza by T. S. Montgomery and the late Mrs. Montgomery. The total cost was as follows: building, $400,000; furnishings, $40,000; architect, $25,000; additional land, $70,000; total, $535,000.

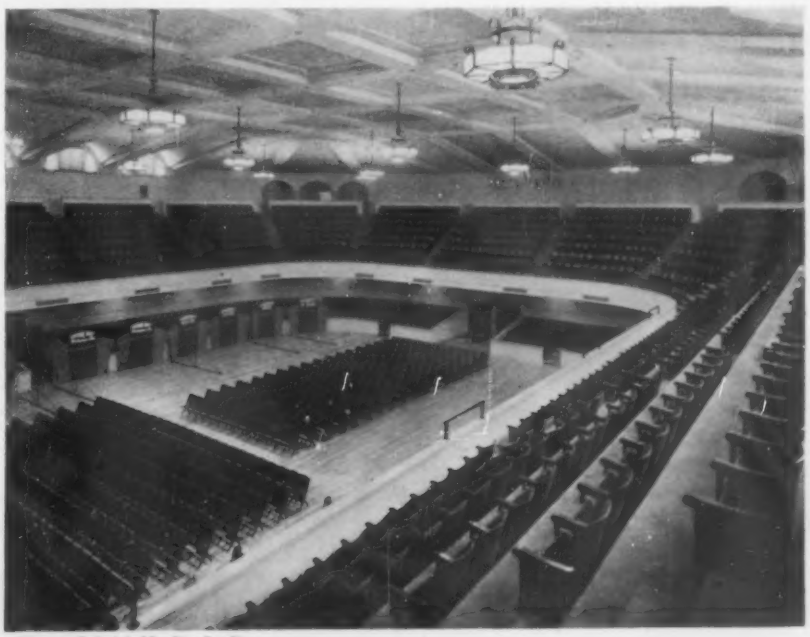
MUNICIPAL AUDITORIUM, SAN JOSE, CALIF.
Binder and Curtis, Architects; Wm. D. Lotz, Structural Engineer

The building was a PWA project, the Government granting $128,000. Financing was completed with a $375,000 bond issue and current funds.

It was designed chiefly for conventions and is being given considerable use for this purpose. The main hall is also suitable for basketball, dances, boxing, wrestling and tennis. The first concert held in it, given by Nelson Eddy, was attended by a capacity crowd.

The decoration of the building is in keeping with San Jose tradition. The lobby is stenciled in warm colors with designs reminiscent of those painted by Indians in the old California missions. A few low-relief plaques and Spanish urns suggest the same theme throughout the rest of the building.

The building is administered through a special department set up by the City Council and headed by Jay McCabe as manager. A schedule of moderate rental fees is charged for the three largest halls when admission charges are collected. Use by conventions is free. Other rooms are available on arrangement with the auditorium manager. To date, revenues ap-



Photos Gabriel Moulin Studios

THERE ARE 3,500 SEATS IN THE SAN JOSE MUNICIPAL AUDITORIUM

FOR BIG LOADS . . . FOR UNMATCHED VALUE . . . FOR GREATER PROFITS . . .

Light loads, medium loads, heavy loads —whatever your hauling needs may be, there's a GMC to fit and to challenge the field.

Take the medium duty range, for example. For 3 to 5 ton loads, there is an array of GMCs whose popularity is proved by registration figures alone. These big, rugged trucks have, first of all, the advanced streamlined styling that buyers have been quick to value. Powerful valve-in-head engines with their many quality features of design assure the performance and economy that are reflected in more trips, more work, greater profits. In fact, everything about these modern GMCs "shouts" engineered-for-the-job design and construction.

Then, too, the new all-steel "helmet-top" cabs, available for these and other trucks in the GMC line, match the chassis themselves in features that contribute to advanced styling, comfort, convenience and long life.

Words fall far short of doing full justice to the great GMC line. Inspection, comparison and test will prove far more.

GMC THE TRUCK OF VALUE ½ TO 15 TONS

GMC PRICES START AT $425 FOR THE ½-TON CHASSIS, F.O.B. PONTIAC

Time Payments available through our own Y.M.A.C. 6% plan

General Motors Trucks and Trailers

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During July we hope you will remember to mention THE AMERICAN CITY

pear likely to balance costs of operation, although the building is used frequently at no cost. The staff, in addition to the manager, includes custodian, engineer and electrician.

The auditorium was designed by Binder & Curtis, architects, and built by Charles A. Thomas, general contractor. Wm. D. Lotz was the structural engineer, and Leland and Haley, of San Francisco, the mechanical engineers. Located only one block south of the City Hall and two blocks south of the new Public Library, it is an important unit in San Jose's plan for development of a civic center.

Much credit for its construction is due members of the City Council. They are: Charles Bishop, President; William L. Biebrach, Joseph T. Brooks, Fred Doerr, Richard French, Al M. Meyer and L. Roger Nash.

C. B. GOODWIN,
City Manager.

A Receiving Home for Girls Held by Juvenile Court

TULSA, OKLA.—The receiving cottage for girls has solved one of the most trying of our Juvenile Court problems; namely, what should be done with a girl between the time she is taken into custody, whether at night or during the day, and the time when a proper investigation can be made. Policemen dealing with such cases at night can take the girls directly to the receiving home.

Formerly, when our own office was closed, it was necessary for us either to detain young girls at the police station or to return them to their own homes, which in many cases were unwholesome or lacking in supervision. Now, we have a receiving home which is sponsored by the Tulsa Federation of Women's Clubs, while remaining under the jurisdiction of the Juvenile Court. The Federation desires no part in the management of the home; its one purpose has been to make such a project possible; and it contributes $30 a month towards its support.

At the same time, it has been understood that any social agency may place girls for emergency care in the home, provided that each agency notify the Juvenile Court of such placements and of final disposition of the cases before removal from the home; that each agency pay for its own placements; and that there will be no duplicate or joint supervision, all such responsibility belonging to the Juvenile Court. The home is not to be used for long-time placements except for venereal cases where boarding-home care cannot be suitably provided elsewhere. A fee of 70 cents per day for each girl is paid the supervisor of the home by the Juvenile Court.

The project has been carried out quietly, and the location of the home is as yet unknown to the general public. Parents are not permitted to visit in the home; if it is necessary for them to see their children, other arrangements are made.

The City Commission pays all the utility bills, and recently began paying the rent, thus relieving the Federation of this expense. The attention of the civic sponsors is now given to furnishing medicines, sewing materials, and other necessities. It is hoped in the course of time to have the necessities, including furniture, entirely supplied by the city, so that the cottage will be wholly a municipally owned and operated project.

THIS SIMPLE COTTAGE IS THE GIRLS' RECEIVING HOME IN TULSA

The cottage has all the features of nearby residences, including its own garden. It has been so quietly conducted that neighbors were surprised recently to learn that it has been in their vicinity for six months. It provides for a maximum of six occupants at a time, with three bedrooms, each with two single beds, a dining room, living room, bathroom, and kitchen. About 40 girls from 12 to 17 were placed there during the first five months of operation. They are girls whose home conditions make immediate removal necessary; who are beyond the control of parents or guardians, runaways, whose parents cannot produce them in courts; who have committed offenses of such a serious nature that their release, pending disposition of their cases, would endanger public safety; and whose detention is necessary for observation, study and treatment.

Placement does not mean commitment. The period of detention is generally less than two weeks. Girls released from the State Training School have been admitted for short periods until they are able to obtain work. There is no penal atmosphere. The girls are impressed with the fact that they are living in a home. They are permitted to go to Sunday School, and no undue effort is made to restrain them in any way. There have been no runaways.

Such a home, operated on as small a scale as ours, can be established with a minimum of expense and effort in a city of any size. It might be even more suitable than a larger-scale project for large city use, since two or more cottages, each designed for specialized cases, can be made to serve the purpose as well as, or better than, a single large one.

VERL A. TEETER,
Chief Probation Officer,
Municipal Juvenile Court.

Police Patrol in Henrico County, Virginia

HENRICO COUNTY, VA.—Since Henrico County bounds the city of Richmond on the north, east and west, a continuous county police patrol 24 hours daily is necessary over thickly populated areas and about 400 miles of highways. The county covers 255 square miles and has a population of about 40,000. It is operated and supervised under the county manager form of government.

Each of the four districts into which the county is divided is policed and patrolled by one of the regular police cars. At headquarters a scout car is maintained to aid other patrol cars in emergencies, and sometimes for special patrol. Two cars are used for night patrol from 11 P. M. to 7 A. M. Three desk officers are on duty, each working an 8-hour shift daily, and eight special police officers are assigned wherever duty demands.

Early in May, 1936, nine new Ford V-8 coaches, white trimmed with blue, and upholstered in leather, were delivered to the county for the exclusive use of the Police Department. All these cars are equipped with heavy-duty generators and police radios. Radio service for the department is available during the 24 hours through the facilities of Richmond, Va., Police WPHF. Eight of the new cars are for patrol, and one is assigned to the Chief of Police. Previous to the delivery of the nine new cars a new Ford V-8, silver and blue, was assigned to the Sheriff of the county for his official use.

EDWIN W. SAVORY,
Captain, Henrico County Police Department.

SEVEN HENRICO COUNTY POLICE OFFICERS, AND THE NEW CARS
In foreground, at left, Capt. E. W. Savory and County Manager Willard F. Day

Announcing

A NEW ELECTRIC ADDRESSOGRAPH

. . . a versatile name- and data-writing machine
for profitable use in many municipal departments

NOW, for little more than the cost of a typewriter, any municipal, county or state department can have the efficiencies of this new electrically-operated, name- and data-writing Addressograph.

IT PRINTS — From light-weight typing units it prints names, addresses, facts, figures and other frequently-used and repeatedly-rewritten data on payrolls, pay checks, service bills, tax rolls, tax bills, license notices and certificates, and a wide variety of other forms and communications.

IT SELECTS — By means of removable metal tabs, the typing units can be classified into many divisions for selective use in printing on forms or addressing.

IT LISTS—A listing device automatically spaces and lists names or data on plain or ruled sheets, such as payrolls, tax rolls and similar office records.

IT DATES—A simple attachment automatically inserts dates on bills, checks and other forms when names and data are being printed.

IT NUMBERS — Another device automatically numbers checks, certificates and other forms at the same time printing is done.

IT SIGNS—Facsimile signatures can also be affixed to all kinds of forms . . . checks, certificates, communications.

IT COUNTS — A counting attachment visibly registers the number of forms imprinted as a check against progress of work . . . against postage required . . . against list totals. Accurate counts are important.

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Tax Collections and Tax Limitations

Taxes and Income

INSTEAD of having risen, as is sometimes alleged, to one-fourth or more of the annual income of the American people, combined Federal, state and local tax collections aggregate slightly more than one-sixth of that income, according to a report released last month by the National Industrial Conference Board.

The Board's analysis, contained in a new pamphlet, "Cost of Government in the United States, 1933-1935," points out that the ratio of tax collections to national income is perhaps the best measure of the tax factor in the national economy.

Prior to 1934 both tax collections and national income declined, but for several years the decrease in tax collections was relatively less than that in national income. Consequently, the ratio showed an upward trend. The ratio for 1929, the last year before the downward trend in national income began, was 12.4 per cent. The lowest ratio for the period 1922 to 1934 was 10.9 per cent for 1925. Ratios of tax collections to national income are shown in the following table prepared by the Conference Board:

Year	National Income in Billions	Tax Collections				
		Amounts in Millions	Per Cent of National Income			
			All Tax Collections	Federal	State	Local
1922	$57.3	$7,502	13.1	6.1	1.5	5.5
1923	65.3	7,234	11.1	4.6	1.4	5.0
1924	67.8	7,812	11.5	4.7	1.5	5.3
1925	72.3	7,884	10.9	4.1	1.5	5.3
1926	74.2	8,605	11.6	4.3	1.7	5.6
1927	75.2	9,059	12.0	4.4	1.8	5.8
1928	76.5	9,342	12.2	4.2	2.0	6.1
1929	78.6	9,759	12.4	4.2	2.1	6.1
1930	72.9	10,266	14.1	4.8	2.4	6.9
1931	61.7	9,300	15.1	4.4	2.9	7.8
1932	48.4	8,147	16.8	3.7	3.4	9.7
1933	44.9	7,501	16.7	4.0	3.4	9.4
1934	50.2	8,767	17.5	5.8	3.5	8.3

Federal tax collections for the fiscal year 1935 totaled some $3,546,000,000, a figure higher than that for any year since 1921, according to this eleventh study in the Conference Board's cost-of-government series. The analysis shows that Federal tax collections for 1935 were $654,000,000 more than those for 1934.

Per capita Federal tax collections for 1935 were $27.81; for 1934, $22.84; for 1933, $14.20. For no year after 1922 were Federal tax collections as large per capita as for 1922 and immediately preceding years.

State tax collections for 1934 totaled $1,732,000,000; for 1933, $1,505,000,000. The peak of state tax collections reached in 1930 amounted to $1,780,000,000.

Local tax collections for 1934 were $4,143,000,000, a decrease of $67,000,000 compared with the 1933 figure. The highest total for local tax collections, reached in 1930, was $5,018,000,000, after which there were successive decreases through 1934.

Pitfalls of Tax Limitation

WEST VIRGINIA is suffering from an atrocious tax limit law which was pushed through by the one-time State Tax Commissioner, T. C. Townsend. Apparently he succeeded in suppressing effective criticism of such a proposal, since no account of the disaster a similar law had wrought just across the river in Ohio was published. The "Townsend Amendment," proposing property tax limits, passed in the 1932 election by a 7 to 1 vote, while at the same time its father was spared the embarrassment of administering it by being defeated for Governor.

The new Legislature was faced with the task of setting up the necessary administrative machinery, and after many unsuccessful attempts the now famous "70-30" measure was evolved, became law, and was declared valid. This approved interpretation provided that 70 per cent of the taxes within the limitation should be deemed operating levies, and 30 per cent debt service levies. But it was not, however, the 70-30 agreement but the division of rates among the units of local government that wrecked city finances throughout the state. Through the odious schedule accompanying the bill the state distributed levies within the limitation so that county net operating losses were 14 per cent, school operating losses 22 per cent, *while municipalities suffered operating fund losses of 52 per cent.*

The people had believed that such a law would force a substantial reduction in the cost of government *at all levels.* Instead, it simply shifted functions, expanded state bureaucracy, and compelled abandonment of many essential services in urban areas. The people also believed that the total annual taxes would be decreased. Actually the bill simply changed the incidence of taxes and shifted the burden from property-owners to propertyless citizens. A state sales tax, that most onerous of taxes, has surprised the deluded voters from the rear.

Now the citizens of West Virginia know that the only real "limit" their vote effected was at the expense of municipal services. They have experienced the discontinuance of police, fire, and health protection services. They have suffered from poorly lighted and unclean streets, and have watched their valuable capital improvements become obsolete and unserviceable through disrepair. And, what is more important, they know that no such condition exists in state, school or county government. In consequence, discontent is coming to the surface. The citizens of West Virginia will soon demand amends. It may eventually be realized that one essential reform is a state-wide scientific appraisal and periodic reassessment by valuation experts to equalize property values, coupled with a scientific real estate tax which will recover for municipal revenues a substantial percentage of the land values which public expenditures create and maintain.

HUME K. NOWLAN,
Executive Secretary, West Virginia League of Municipalities, Charleston, W. Va.

Right to Acquire Tax-Delinquent Land Reduces Tax Delinquency

AS a means of adding to the municipality's land holdings, the Act authorizing the town of Collierville, Tenn., to operate "an enclave of economic ground rent,"* has as yet had negligible results; but as a device to stimulate payment of delinquent taxes, its effects have been highly satisfactory. The Act authorized the town of Collierville to acquire land, at tax sales or otherwise, and to lease the same for a period not exceeding 99 years. Improvements on such leased lands are exempt from municipal levies. Only the "single tax on land values" could be assessed by the municipality on the lands thus leased. As reported in *Land and Freedom* for March-April, 1936:

"About the middle of February, a tax bill was filed by the town to compel payment of all delinquent taxes on lands and buildings in Collierville.

"Only 18 taxpayers, in this town of more than 1,000 population, were delinquent at the time of the filing of these suits. Few towns in America can today show so little tax delinquency.

"Since the filing of these suits, already more than one-half of those sued have paid their taxes. In all probability the remaining delinquents will pay their taxes before the suits can be prosecuted to conclusion, and the property on which the taxes are levied can be sold to the town for delinquent taxes.

"At the present time, Collierville has only one lot leased for economic ground rent. This lot was formerly the site of the town jail; but the jail was demolished, and built elsewhere. Thus the town had a lot which could be leased under the Enclave Law. No citizen of the town has objected to the leasing of this lot; and the validity of the Enclave Act has not been challenged."

*See THE AMERICAN CITY, June, 1933, page 58.

Again ALLIS-CHALMERS RINGS THE BELL!

Tandem drive SPEED PATROL

Note the extreme flexibility of the Allis-Chalmers tandem assembly — assuring good traction under the most extreme conditions. Pneumatic tires or low pressure air tires.

RECENTLY we made this sporting suggestion: "Compare the Allis-Chalmers Speed Patrol before you buy!" Many buyers did . . . and the demand for Speed Patrols has increased by leaps and bounds. Now . . . the exclusive quality features of the A-C Single Drive units are also available in Tandem Drive Speed Patrols. Wherever working conditions call for the tandem drive principle . . . in oil mix or ditch work . . . in extreme sand or snow removal . . . on steep slopes—this is the Patrol you want. Tandem assemblies pivot on the rear axle with unusual freedom . . . assuring traction for all wheels at all times . . . regardless of ruts or ditches. This is accomplished without using a differential. Dependable, quiet gear drive—with no chains to stretch or wear. Simple, easy-to-adjust hydraulic brakes. Designed and built entirely by ONE company . . . with branch houses and dealers everywhere. Ask an A-C dealer.

- ★ NO. 42 AND NO. 54 SIZES
- ★ FOUR WHEELS OR EIGHT
- ★ DEPENDABLE GEAR DRIVE
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- ★ ALL BOLTED CONSTRUCTION
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- ★ BUILT, BACKED AND SERVICED BY ONE ORGANIZATION!

ALLIS-CHALMERS

TRACTOR DIVISION—MILWAUKEE, U. S. A.

Hempstead to Record and Bill 250,000 Assessment Parcels by Machine

By GEORGE KIEFER
Chief Clerk, Board of Assessors, Town of Hempstead, N. Y.

"Tax roll procedure in New York State is as completely out of date as an ox-cart. Today every taxing jurisdiction should have a permanent and continuing roll made up in modern card catalog or loose-leaf form designed to allow the use in taxing offices of the larger units of modern billing and accounting machines of the type employed by progressive business establishments."

Annual Report of the State Tax Commission for 1934 (dated February, 1935).

WHEN the Town Board of Hempstead, N. Y., was informed that a modern accounting and billing system for the town would cost $63,000 for the equipment and that there would be no saving in payroll, they naturally wanted to have all the facts before saying yes. That they did not say no at once, indicates a general impression that the new system was sorely needed.

The Board received the facts last January; approved the report presented by the Burroughs Adding Machine Co. based on a study of the old hand-kept system that had grown up during 50 years of progress from farm to city; and on February 17, 1936, plate-embossing started for the new system, which will be fully effective this year.

The basis for assessment consists of 250,000 parcels, of which 15,000 are descriptions and 335,000 are lot properties for which we follow the map in the County Clerk's office. This map gives some idea of how to lay out the lots, but developers will lay them out in accordance with their convenience, some fronting on one street, and some on another. As a result, the assessors meet with continual difficulties in accurately describing properties.

The town of Hempstead includes 20 villages, 18 water-supply and water districts, 27 lighting districts, 31 fire and fire-maintenance districts, 5 sanitary districts.

All Records Formerly Kept by Hand

The records for the 30 years have consisted of three copies of the assessment roll under one set-up, and one copy of the field book under another set-up. In the decade after 1880, maps were filed as records. Then, at about 1890, the State Tax Commission permitted the maps filed in the county clerk's office to be used for assessment work.

About 1902, the town was laid out in various school districts. Since that time about 1,500 developments have been laid out and developed. Where the line formerly merely went through a farm, it now splits the development, creating a condition where one development may be in three school districts. There are 33 school districts, and any one of them may be found in seven or more volumes of the 37 volumes of 450 pages each that are written each year. For example, School Districts 1 and 3 are mentioned in seven of these volumes; School District 3, in eight volumes; School District 16, in nine volumes. The assessors have had to recapitulate every school district by going through some of the 37 volumes as many as 33 times.

The same amount of drudgery was necessary in making tax extensions. As there are more than 100 sets of valuations to compile—for water, water-supply, lighting, fire, fire maintenance and sanitary districts, more than 100 sets of tax extensions had to be made. All these extensions, as well as the valuations, had to be made out by hand on the tax bills.

As a necessary aid to the individual assessors, the field book was broken up according to localities. Thus, the assessor assigned to Lynbrook would have records of all the properties in that village.

Will Use Addressograph and Billing Machines

About a year ago the Burroughs Adding Machine Co. requested permission to make a study of the existing methods and to submit recommendations for a mechanical system. Permission being granted, the outcome has been the new system that is now being put into effect. Other business machine manufacturers bid on the proposition, but the initiative and successful record of the Burroughs Co. was rewarded with the contract. The Addressograph-Multigraph Corporation also submitted a successful report in its field. Our new system, though said to be more complicated and complete than any other, is very much like the Newark, N. J., Revenue and Finance Department system described in the July, 1935, issue of this magazine. It is also similar to the systems now used by Jersey City and Harrison, N. Y.

The Addressograph plates are in two sections. For the 235,000 map properties, the mailing address is placed on the top part of the plate. The bottom of the plate carries on the first two lines the code or codes that identify the property, and on the lower three lines the name of owner,

Many Errors Found in Titles By Surveyors

Inaccuracies, Handed Down From Early Period, Are Stricken Out

Hempstead, April 11—By the time clerks and tax experts in the office of the Town Board of Assessors complete their work of reorganizing the township's tax rolls, the town will gain heavily in assessments none knew it was entitled to, George Kiefer, chief clerk of the department, disclosed here today.

Kiefer, head of the force working at the job of copying the generations-old, handwritten assessment records upon stencils that will make Hempstead Township's tax billing a machine process beginning next year, said that the work of reorganizing the records in his office is largely completely already.

Loose Methods Cited

Actually, however, the checking-up showed that there were 96 acres in the particular case. It seems that years ago, said Kiefer, they were less scientific about title records. A farmer who had 86 acres would be interviewed by the tax assessor as follows, the chief clerk reported:

"Well, haw many acres have you got?"

"Oh, about 90 acres, but 20 acres of it's just woods. Nothin' but woods."

"All right, then," the tax assessor would say, quite readily because he was usually a friend and neighbor of the farmer, "suppose I put down 70 acres."

And 70 acres was put down. Year after year 70 acres remained on the record. Year after year the township lost taxes on the extra 20 acres, says Kiefer.

Expects Fewer Protests

With the tax rolls brought up to pace with the machine age, Kiefer thinks there will be fewer appeals by property owners protesting the amount of their assessment. Many times, says the man behind the reorganized tax rolls, taxpayers are billed for more taxes than they ought to pay, merely because a clerk has made a mistake in copying from the tax books. So the taxpayer goes through the distended tintamarre of certiorari before the town board.

Upstairs in Town Hall, while Kiefer's men work upon the mechanized tax-billing system, more clerks and engineers in the town engineering department work on a "town atlas."

Many Errors Found

In preparing the 165 maps (so far) for the atlas, relief-worker technicians under direction of Town Engineer Carroll W. McLaughlin, had to make surveys of every parcel of land they came upon. So doing, they discovered discrepancies in the land measurements in many cases, and reported them to the Tax Department. Hence, revelation of the assessments Hempstead Township didn't know it had.

So far, McLaughlin reports, the atlas-makers have found the old records wrong on property measurements by as high as 30 acres on one parcel of land. In other cases they found parcels of land not listed and never listed on the tax bills.

The tax map for Hempstead Township, started in 1933 with work by the TERA relief staff, is 80 percent complete, and has cost $35,000 to prepare so far. When finished the "atlas" will be a collection of 200 maps, 24 by 36 inches in size, each one illustrating an area of land 6,000 feet by 3,500 feet, with all roads, lanes, rights of way, parks, railroads, and plots of land indicated.

WPA project No. 2236, Fresno, California; Jean Vincenz, Director of Public Works. One mile of 30-in. reinforced concrete sewer pipe connects airport to 48-in. concrete outfall built in 1917. Maximum cut on new project, 12 ft.

FRESNO LOOKED AT PAST PERFORMANCE AND CHOSE *Concrete Pipe* FOR ITS NEWEST SEWER PROJECT

FRESNO'S WPA project begun early in 1936 calls for one mile of 30-inch concrete pipe running from the airport to a 48-inch concrete pipe outfall sewer built in 1917.

Concrete pipe was selected because of the excellent service record of this older sewer, which was built with 5-inch walls and runs one-half to two-thirds full except under rare storm conditions, with 2½ feet per second average velocities. The old pipe was found to be in perfect condition after 19 years of service.

Fresno has nearly 25 miles of concrete pipe sewers, all in first class condition.

Satisfactory sewer performance requires good materials plus proper design, construction and operation. That means the use of concrete, and the supervision of an experienced sanitary engineer. His service is cheap insurance on the success of these important jobs.

Write for booklets "*Monolithic Concrete Sewers*" and "*Concrete Pipe Sewers*," providing helpful data on the use of concrete in sewers. Free upon request.

PORTLAND CEMENT ASSOCIATION

Dept. A7-4, 33 W. Grand Avenue, Chicago, Ill.

When you write for that catalog, kindly mention THE AMERICAN CITY

name of map, and the block and lot numbers.

Three Addressograph machines are used. Machine 1 prints name and address of the person to whom the bill is mailed. Machine 2 prints the codes. Machine 3 prints the descriptions.

For the 15,000 descriptive properties, a "follow" plate is used. Machine 1 now prints the top section of the plate, as described. Machine 2 prints the codes on the bottom section. Machine 3 uses the follow plate, which gives name of owner, acreage, NESW boundaries, and also numbers each parcel.

By this system, where School District 4 was in eight volumes of the old record, it is now in one volume only by the device of setting up the assessment rolls according to school districts. Any time a receiver desires to balance his books, he has only to add his payments in that district.

One may well ask why this method of setting up the assessment roll by districts was not pursued before. The answer is that the complications would have been too great for handwork every year. There were too many chances for error. Complicated as the new system actually is to get into accurate shape, once this has been achieved, it is thereafter merely a matter of correcting the machine-printed roll each year. Whatever changes have taken place are noted on the printed roll and these changes made on the plates.

The Burroughs tax accounting machines print three original copies of the tax roll and the tax bill. Where before it was impossible to have a check on valuations, we now have a positive accounting control. The valuations are put in by a billing machine, which adds these at the same time and gives a total at the bottom of the page and a grand total for the volume.

The next operation is tax extensions. The machine automatically prints the tax rate and amount of the tax at the same time that it prints these on the assessment roll. Taxes are paid semi-annually, and the machine calculates and prints the half due at each payment. The stub type of bill will be used, and cash payments will be receipted by the new Burroughs tax receipting machines which perform that precautionary operation.

With this system it is possible to figure out in advance what the tax is actually going to be, since the machine carries all the decimals. The system speeds up work for the receiver, who with hand-posting was compelled to chase through 37 volumes. A quick balance also is available.

Embossing of the 250,000 plates was completed last May. The new roll will be completed and filed by August 1, when the school-tax bills are made up; they are sent out October 1. The town tax bills will be sent out in time for payment January 1 when due.

New York Municipalities Reduce Debt and Assessed Values

And Some Other News from the 27th N. Y. Mayors Conference

THAT the cities of New York State have reduced their total costs, exclusive of relief, 12 per cent, and the villages 17 per cent during the depression, and that real estate in these communities is assessed for $600,000,000 less than it was in 1930, was reported by President Wendell E. Phillips of the New York State Conference of Mayors and other Municipal Officials at the 27th annual meeting at Kingston June 3-5. More than one-half of the 1935 realty tax in 6 cities and 19 villages went to pay old debts; debt service for all the municipalities is accountable for 40 per cent of the total cost of government, and "the payment of this existing debt will be a dominant factor in municipal taxation for at least the next nine years."

Four factors, however, assure the straightening-out of this situation. The first two are attributable to the work of the Mayors Conference, in providing the facts and in disseminating them. The third factor is the state aid on home relief, which now amounts to 40 per cent of the expense. The fourth factor is that a strong start has already been made in debt reduction. From the total bonded debt of $1,600,000,000 in 1931, a reduction of $72,000,000 has already been made, of which $32,000,000 was achieved last year.

A timely warning of the difference between true economy and expenditure reduction was voiced by Frank W. Herring, Executive Director of the American Society of Municipal Engineers and International Association of Public Works Officials. Economy is low-cost rendering of necessary services, not the sacrifice or abandonment of such services. Decreased expenditures for inferior equipment having shorter life can result in increased costs. Decreased maintenance, while showing a present book saving, is building up heavy expenditures for the future.

The Legislative Committee, reported Corporation Counsel Frank S. Parmenter of Troy, studied 319 bills, and approved 85, of which 43 have become laws. "Six of these new laws regulate the issuance of municipal bonds. The Ross-Smith law requires that only serial bonds be issued except by New York, Buffalo and Rochester, and that payment of the first installment must be made in the calendar year following the sale of the bonds. It also drastically reduces the period for which bonds can be issued.

Frederick A. Moran, Executive Director, State Division of Parole, pointed out that the state's criminals are drawn from the 500,000 pupils showing behavior problems and from the actually delinquent pupils. He described the value in this age, of visiting-teachers in place of the old type truant officer. In other words, try to find out what is the matter before inflicting punishment, if any. He also stressed the familiar fact that most criminals are young people, 60 per cent of the highway robbers being under 20 years.

Better Officials

Thirty-six training schools with attendance of 6,935 were operated for eight groups of officials, reported Mayor Charles D. Osborne of Auburn, as follows: ten schools for policemen, twenty for firemen, one each for police chiefs, instructors of municipal zone fire schools, assessors, financial officials, public works officials, and city and village clubs. The Municipal Training Institute, which operates these schools, will now receive Federal vocational education funds. Practically all policemen have received the training, and future needs in this course cover only the 200 recruits per year exclusive of New York, Buffalo and Rochester.

"Selling Municipal Government"

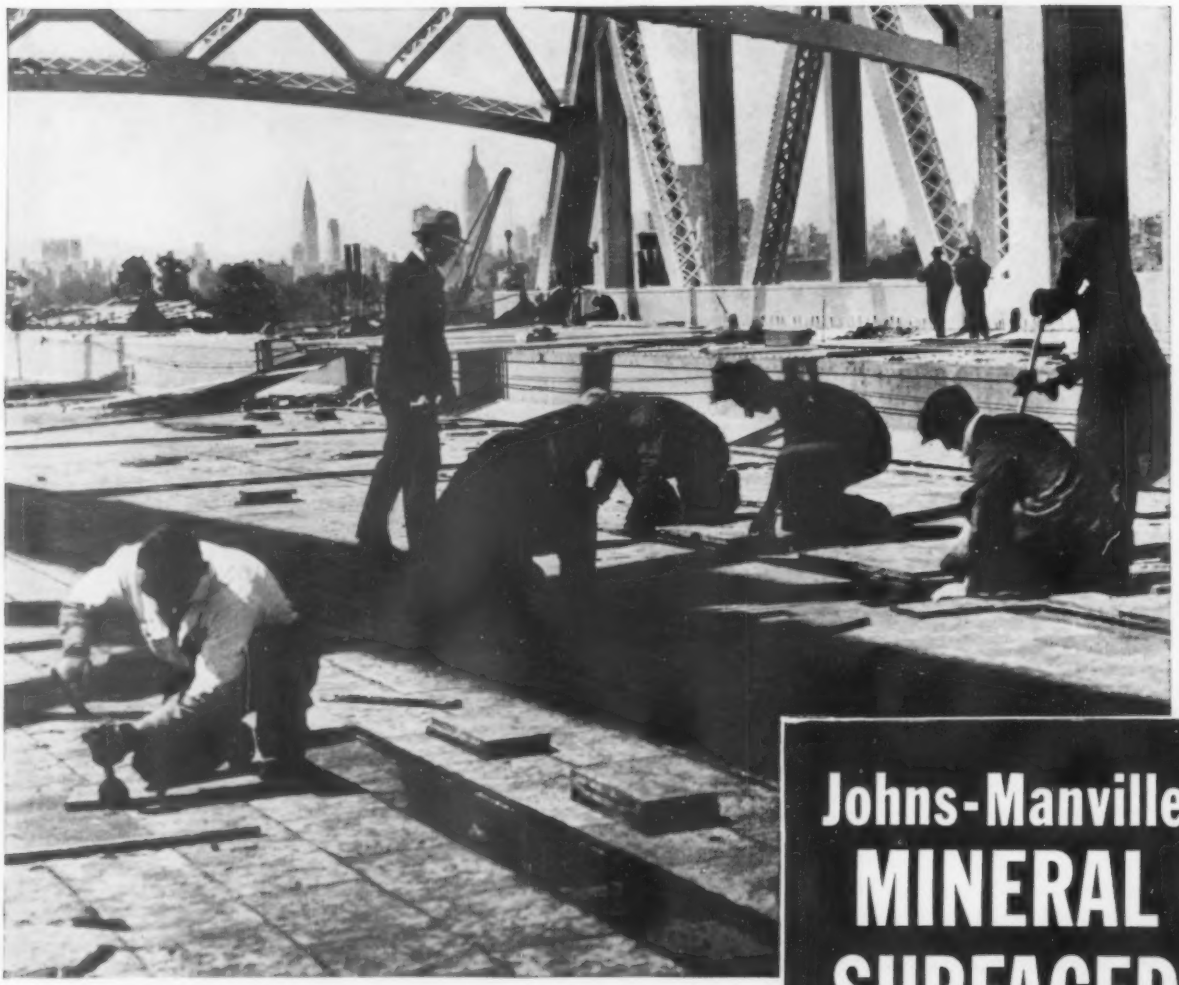
This personnel training service and the research, actuarial and purchasing services are sound indirect methods of selling municipal government to the people who pay for it. Taxpayers may know little of these services, but they and the press should be quick to note the evidences of competence and give credit to official initiative and official interest in snappier municipal operations.

The very fact that all officials are aware of what an asset an interested citizenry would be, and deplore the fact that there usually isn't one, gives a peculiar value to all efforts that tend to impress on the governed the humanness, aliveness and comprehension of the government. "Selling Municipal Government" was the title of the paper* presented by the new President of the Conference, Charles Stanton, Mayor of Rochester. The new Vice-President is Mayor Francis H. Marx of Oneonta. The continuous record of William Parr Capes as Secretary of course remains unbroken, and Mayor John Boyd Thacher, 2nd, of Albany was re-elected Treasurer. The 1937 meetings will be in Saratoga Springs.

* See page 101 of this issue.

ON NEW YORK'S NEW TRI-BORO BRIDGE

Safety, PLUS!



Wet-weather safety is the first requisite of all surfacing materials. But it isn't the whole story. Modern planking must be light—to allow for increased loads. Local labor should be able to install it easily, rapidly. The bridge must be ready for traffic the instant the last plank is laid—or during application, if necessary. There should be no warping, cracking, splintering or decay. And throughout its long years of service, maintenance costs should be virtually negligible. Hence, this picture of work in progress finds J-M Mineral-Surfaced Asphalt Bridge Plank going down on the Bronx Approach (over the Bronx Kill) of New York's newest bridge. For data sheets on this material, and on the smooth-surfaced type also, write to Johns-Manville, 22 East 40th Street, New York City.

Johns-Manville
MINERAL SURFACED
Asphalt Bridge PLANK

JM

Mention THE AMERICAN CITY—it helps.

Traffic Control and Facilitation

Conducted by Publications Committee, Institute of Traffic Engineers, 1 Park Ave., New York

Paul L. Green, Chairman; John Gibala, Vice-Chairman; Donald M. McNeil, Dwight M. McCracken, D. Grant Mickle, Robert A. Mitchell, Edward J. O'Meara, John C. Wrighton, Charles G. Beckenbach, Bruce D. Greenshields, Leslie J. Sorenson, Charles H. Rex, Tracy D. LeMay

Accident Reduction Through Properly Planned Signal Installations

THE nation-wide safety drive launched in January this year to concentrate attention of motorists and pedestrians alike on the vital necessity for a drastic reduction in the number of automobile accidents, has also called attention to the important subject of traffic control both in congested areas and on state highways.

Certain state-highway statistics on the subject of traffic control in relationship to accidents show that safety experts and engineers are studying this subject with increasing interest, particularly as it applies to through highways. These figures are only partially completed as yet, and cover but three states, Connecticut, Ohio and Delaware; but the story they tell is of interest to all concerned with safety. Here are three cases reported by the Automatic Signal Corporation, New York.

During the year prior to May 1, 1934, at the intersection of U. S. Route No. 1 at Kings Highway in the town of Fairfield, Conn., there were 12 accidents, 20 injuries, and 1 death. Property damage amounted to $2,240. On May 1, 1934, an automatic traffic-control light was installed, and the following year showed only 6 accidents, resulting in 7 injuries, no deaths, and property damage of $537.

At Edinburgh, Ohio, 17 months prior to the installation of an automatic signal at the intersection of State Routes 14 and 18, there were 8 accidents, 10 injuries, and 3 deaths. Eight cars involved in these accidents were completely demolished. Additional property damage amounted to $1,250. For the 17-month period after October 11, 1934, and after an automatic signal control had been installed, the statistics decreased to 1 accident, 2 injuries and 2 deaths, with property damage of $700.

At the intersection of Dupont Highway and Glasgow Road, New Castle County, Del., the year prior to installation of signal control produced 18 accidents, with property damage of $2,855. Operating with signal control, the following year showed but 6 accidents and $390 in property damage.

Signals Where Needed

This is not to say that all traffic lights are capable of reducing motor-car accidents in the same proportion. As traffic experts have pointed out in the past, *improperly* planned traffic lights may increase rear end collisions, accidents to pedestrians from cars taking a turn, and accidents to pedestrians who disobey the signals. The chief trouble seems to be that traffic lights have sometimes been sold for intersections where there was no need for them, with resultant loss of time and patience on the part of motorists and an increase in accidents.

Further evidence that improperly planned traffic lights are psychologically bad for motoring, is the fact that the percentage of violations, both as to the red stop and the yellow caution lights, is higher on an average at stations which are operated on a fixed-time cycle than at those which were actuated by the approaching traffic. Apparently drivers are impatient of delay caused by fixed-time cycles when there is no cross traffic to warrant their detention, and consequently take a chance of running through the intersection against the red signal.

Vehicle-Actuated

A great deal of attention is now being accorded to that method of control that is operated by the vehicles themselves. When there is no cross traffic, there are no unnecessary red lights. The automobiles themselves actually set the traffic signal. It is this system of control which has accounted for the sharp reduction in accidents cited in the first part of this article.

Pressure-sensitive vehicle detectors are placed in each of the approaches to the intersection. It is the function of these detectors to signal to the control mechanism the necessary information relative to traffic which is approaching the intersection, the presence and the passage of vehicles, their number, speed and, where necessary, the direction of motion of each car. The control mechanism receives these continuous reports of traffic conditions in the approaches of the intersection and is then able to assign right-of-way on the basis of maximum safety and efficiency—a superhuman robot traffic officer, always alert, impartial and courteous, regardless of the time of the day or the season of the year.

Under so-called "full-actuated" control, if a car approaches the intersection it is immediately given the right-of-way if there is no cross traffic present. If cross traffic is present, the car is forced to wait only the shortest possible time consistent with safety, and it is accorded right-of-way immediately upon the appearance of a suitable gap in cross traffic. In the case of continuous heavy cross traffic, right-of-way is given the waiting car after a certain predetermined time. It will readily be seen that under these conditions maximum safe and efficient use of the intersection is assured, and needless waiting in front of a red light is unknown.

Traffic-actuated control is adapted to all types of intersections, the ordinary cross type, T, X and Y types, offset crossings, five- and six-point intersections and circular type intersections. Recent develop-

Cut-away view of the rugged, heavy-duty and weatherproof vehicle detector which is the "eye" of the Electro-Matic signal control. It is made of specially compounded rubber developed by U. S. Rubber Products, Inc.

Electro-Matic traffic control at the intersection of Boston Post Road, King's Highway and Old Post Road at Fairfield, Conn., which reduced injuries to persons from 20 to 7 in a year. At left, Electro-Matic Multiphase installation, Niles, Mich. These are installations of the Automatic Signal Corp., New York City

* *"Many wondered when they saw a new kind of brick paving laid in Chestnut & Walnut Streets* what the sequel would be.*

"Well, go look at them after two years of tough wear and two particularly rigorous winters . . . an expert in paving tells me they have been quite wonderful."

—Girard in
Philadelphia Inquirer.

*NOTE—Chestnut & Walnut Streets is location of historic Independence Hall. They were brick paved in 1934.

THE PAVEMENT THAT NEVER WINTER-KILLS

● Even mild weather damages pavements which are not fully weather-resisting. Winter weather is more destructive—the winter of 1935-36 was abnormally destructive.

Notice in your pavements, the exemption from weather damage that brick pavements have. *This is an important distinction between brick and other pavement types.*

There are several definite reasons why brick resists weather damage. The surface of each brick is moisture-proof due to the vitreous fusion of its surface during the firing process. Water cannot enter to freeze, expand, spall and destroy. Asphalt joints between brick keep water out of the pavement structure, allowing expansion and contraction during wide temperature swings—hence no cracking.

Prolonged snow and ice concentrate traffic into narrow ruts. Brick has the resistance to abrasion and impact that prevents potholes, rutting and shoving.

According to official records, the winter of 1935-36 was the most severe since 1889. More than one brick pavement has served through both those record winters as well as in the 46 intervening years.

Brick pavements cost less per year of service, because they resist weather as well as traffic damage. National Paving Brick Association, (Affiliated with Structural Clay Products, Inc.) National Press Building, Washington, D. C.

BRICK

FOR NEW CONSTRUCTION OR RESURFACE JOBS

ments combine the principles of traffic actuation and progressive control.

The pedestrian is anything but the "forgotten man" in these systems. Pedestrian push-buttons are frequently incorporated in the system, and in many cases exclusive pedestrian-actuated systems are used. The pedestrian secures his right-of-way by pressing a button, thereby stopping cross traffic, subject to certain necessary limitations, and securing for himself safe passage across the highway.

It is believed that further study of traffic control and a more extensive use of these amazing electrical robots will go far to assist in the success of nation-wide efforts being made to reduce the toll of traffic accidents.

Traffic Training in the Schools

THE results obtained from the Berkeley Traffic School have been so favorable that courses in traffic safety education are now being introduced in the junior high schools and will eventually be taken in the elementary schools. It is also planned to develop a high-school course in training for the proper operation of the automobile. All this work which is being done in the schools, and which is rapidly gaining favor with the public, is under the theory that if it is a good plan to send a traffic-law violator to school, such violations might have been prevented had the individual had the benefit of training before starting and while learning to drive.

J. A. GREENING,
Chief of Police, Berkeley, Calif.

Teaching Safety to Traffic Violators

UNIQUE in North Carolina, and one of the few of its kind in the nation, the police traffic safety school being conducted at Asheville, N. C., has proved itself such a success that it has received the praise of judges, lawyers, police officials and laymen.

Capt. B. E. Brenton, in charge of the Police Department's motorcycle squad in this North Carolina vacation land, was the originator of the Asheville traffic safety school and is in active charge of planning the programs and directing the classes. With the turn of the year, ordinary educational campaigns having proved of little help in reducing traffic fatalities and injuries, Captain Brenton suggested to his superiors that perhaps a school in which many of the violators of traffic ordinances could be taught the need for safety would prove valuable.

He was given permission to promote the idea and approached the Judge of the Police Court in Asheville, Sam M. Cathey, and the Judge of the General County Court, Julian P. Kitchin. It is in these courts that persons running afoul of the traffic ordinances and laws in Buncombe County, of which Asheville is the county-seat, are tried. Judge Cathey and Judge Kitchin heartily approved of the idea and agreed to cooperate with the police in carrying it out. They participated in the initial session when the school was launched in April.

The two judges have followed the practice of sending persons convicted of the less flagrant violations of the traffic laws and ordinances to the school for periods varying from four to eight weeks. Many of those sentenced have been young men whose parents would have had to pay for their speeding and other forms of reckless driving. But many older persons who have shown a disregard of the traffic laws and ordinances, or little knowledge of them, have been forced by the courts to attend. Several given such sentences have attempted to "pay off," but the judges have refused to accept their fines.

At the first session of the school only a few "students" were on hand. In fact, the visitors, curious to know what was going on, outnumbered them. Now more than 70 are usually present each Thursday evening in the police courtroom to hear expounded the rules of the road—how one should or should not operate an automobile.

IN THE POLICE COURTROOM AT ASHEVILLE, N. C., CAPT. BRENTON IS SHOWING STUDENTS AT THE CITY'S TRAFFIC SAFETY SCHOOL THE CAUSES OF RECENT AUTOMOBILE ACCIDENTS IN THAT CITY

The students are being given instruction in the traffic ordinances of the city and the traffic laws of the state. Silent and sound motion pictures give visual testimony of the dangers of reckless driving and the results of lack of care when behind the wheel of an automobile. A blackboard has been set up in the courtroom on which serious accidents of the past few weeks are diagrammed, with Captain Brenton explaining to the students where the fault lay, how this or that driver could have avoided a collision by using ordinary care.

At the end of each four-week period the students are given an examination—twenty questions relating to the traffic laws of the state and the traffic ordinances of the city.

As the students get the reason for the classes, they are showing increasing interest. Many have given talks before the students, pointing out the benefits they have derived from the lessons. Others making talks at the school have been safety engineers of the larger industrial corporations in western North Carolina. Captain Charles Farmer, head of the North Carolina State Highway Patrol, has twice addressed the students and has suggested that other cities in the state could reduce their traffic accidents and fatalities by adopting the idea.

Captain Brenton's records show that the number of accidents in Asheville has been reduced to some extent since the school was opened and that the number of accidents where serious injury occurred has been cut by approximately 25 per cent. With the number of students increasing weekly, he expects this showing to improve.

So well has the traffic school worked in Asheville that on June 10 Captain Brenton began a monthly school for Negroes. Since the Negro population of Asheville is relatively small—about 28 per cent of the total, he feels that the monthly classes will be sufficient.

The weekly school has not been confined to students and curious visitors. Entire high school student-bodies have had most of their members present at some of the sessions, and at others Boy Scout troops have been guests. A number of schools throughout the county have obtained safety programs from Captain Brenton to be given weekly to their students as a result of the interest in efforts of the police to curb automobile accidents, injuries and fatalities.

JAMES A. BEST.

EVERY MUNICIPAL EXECUTIVE KNOWS

VALUE

goes deeper than price

IT IS a common error to confuse the words "price" and "value." Actually, "value" is what you get for the price you pay.

Ford believes "value," as applied to trucks and commercial cars, should be a combination of high quality at low price with superior performance at low cost . . . that it should include low operating cost, low-cost maintenance and long-lasting, brilliant performance. The experiences of truck and commercial car owners indicate that they agree with Ford's idea of value.

Further evidence comes from the cost records of owners. These records prove that V-8 Economy is OVER-ALL ECONOMY . . . that it includes savings in fuel and oil, tires, taxes, license fees, insurance, interest, wages, depreciation, capital investment and repairs.

Ford V-8 Truck and Commercial Car "VALUE" goes deeper than price. True appreciation of V-8 Value comes only after tens of thousands of miles of reliable, economical service. But your Ford dealer invites you to "sample" V-8 Performance . . . a vital element of V-8 Value . . . under your own operating conditions. Call your Ford dealer today and set a date for an "on-the-job" test.

• • •

Any new 112-inch wheelbase Ford V-8 Commercial Car can be purchased for $25 a month, with usual low down-payment. Any new 131½-inch or 157-inch wheelbase Ford V-8 Truck can be purchased with the usual low down-payment on the new UCC ½% per month Finance Plans.

FORD V-8 TRUCKS

AND COMMERCIAL CARS

Improving Municipal Administration

Current Items from the
Public Administration Clearing House

Public Works Engineers' "School for Administration"

A NEW kind of school for the men who build and manage streets, bridges, sewers, water systems and other community facilities has been tried and found so successful as to result in plans for repetition.

The "school," held as a three-day conference at New York University in May, was designed to acquaint public works engineers with problems of administration, on the theory that administration is as much a part of the public works job as knowing how to design and build a city's sewers. Sponsors of the conference were New York University's College of Engineering and Division of Public Administration, and the American Society of Municipal Engineers and the International Association of Public Works Officials.

To attend the ten lectures which comprised the conference came heads of public works department bureaus, WPA and PWA engineers, and college professors of engineering, all from New York City and nearby towns. They heard two lectures on public works finance, which acquainted them with such subjects as sewer-rental laws, street assessments, underwriting bonds, and the economics of grants-in-aid. In a session on procurement practices in public works, lectures by the New York City Commissioner of Purchase and a governmental consultant gave them insight into the purchasing problems and approved purchasing methods for cities of small, medium and large size. Inter-community problems, such as flood control, power development and regional planning, were presented in another session, with suggestions as to possibilities of their cooperative solution. Two lectures on planning for public works construction and the personnel problems of public works closed the series.

"The course was not designed as further training for these municipal engineers in the prosecution of their engineering duties," comments Frank W. Herring, Executive Director of the Joint Secretariat of the American Society of Municipal Engineers and the International Association of Public Works Officials. "Those who attended were presumably well qualified to carry out the technical responsibilities of their present posts. As engineers, however, they desire broadened knowledge about the administrative aspects of the public works field. Engineering knowledge plus familiarity with the subject of public management represents an invaluable combination in the service of the modern community."

It is planned to repeat the New York school next year, and the two associations are considering sponsoring similar conferences in other parts of the country also.

One City's Plan for Industrial Peace

TOLEDO, OHIO, now has an official court of arbitration for adjusting industrial disputes. A year's experience with its Plan for Industrial Peace has resulted in a $5,100 appropriation included in the 1936-37 budget to continue the labor relations body which was established in 1935 with financial aid from the Federal Government.

Four disastrous strikes were the direct cause for adopting the Plan, according to Edmond Ruffin, Director of the Industrial Peace board (which administers the Plan) who writes in *Public Management*, magazine of the International City Managers' Association. The disputes took place in 1934 and early in 1935, culminating in one that brought the U. S. Assistant Secretary of Labor to the scene.

Three newspaper editors and several leading public citizens helped set up the Plan for Industrial Peace, which included the formation of a Peace Board composed of an impartial chairman, five representatives of labor, five of management, and eight non-partisan citizens. The Central Labor Union, dominating labor organization in the city, selected the labor representatives. The Chamber of Commerce chose the management representatives. The eight impartial citizens were picked by the Board Chairman and included two judges, two attorneys, a rabbi, a Catholic priest, a relief director and a retail merchant. The Board in itself cannot force either labor or management into any decision. It functions only as a court of last resort, "where cooler minds and impartial thinking are helpful in reaching a satisfactory agreement before strikes or violence occurs."

The Peace Board's effectiveness was proved within the year, Mr. Ruffin writes. Ten labor management disputes, affecting over 4,000 workers, were settled through its negotiations before strikes were called. Seven strikes, involving 1,160 employees, were also settled by the Board. Violence has been negligible since the Plan was established, according to Director Ruffin.

Because so many other cities sought aid in setting up similar boards, the Federal Government withdrew its financial support from the Plan in March of this year. Continuation of the Plan was then assured by the City Council's appropriation, made in response to a concerted demand from labor unions, industrial executives, civic organizations, private citizens and newspapers.

Remedies for Tax Delinquency

MANY revenue and financial technicians of the country have specific remedies to offer tax-sick states and municipalities, according to a survey of the tax-delinquency problem made by Dr. Paul Studenski, Professor of Economics at New York University. On the other hand, Dr. Studenski discovered several of the opinion that no solution could be found.

A number of restoratives were proposed to return the various governmental units to a sound tax basis. They include (1) centralization of tax collection in the county for small communities; (2) appointment of tax officers to free them of political influence; (3) quarterly or even monthly collection of taxes; (4) use of private business collection methods; (5) reasonably high, fixed penalties (preferably graduated), strictly enforced; (6) appointment of tax receivers to manage the income of delinquent properties; (7) mandatory sale of tax liens at the expiration of a specified time; (8) simplification of foreclosure procedure; (9) creation of special tax-arrears departments, divorced from politics; (10) more scientific assessment; (11) development of new revenue to shift some of the tax burden from real estate; (12) publicity to acquaint the taxpayer with the services performed in return for the tax dollar. These twelve recommendations are being appraised as to their relative merits, Dr. Studenski indicated.

The depression was the most frequently given reason for the increase in tax delinquency. A number of those consulted, however, expressed the opinion that it will be necessary to dig deeply into the political, administrative, and fiscal structures of local governments in order to find the real seat of the trouble.

As outstanding weaknesses in the existing tax collection systems those who replied to the survey cited: political tampering with tax law enforcement; lump-sum tax collection; insufficient penalties; laxity of tax-sale law and procedure; over-assessment; and too heavy a tax burden on real estate.

Five hundred nationally known tax and financial experts pooled their opinions in the survey.

Assessors Need Maps

WHEN assessors in cities and counties throughout the United States do not possess adequate maps to aid them in their work, it is almost certain that many parcels of real estate are not being assessed, says Albert W. Noonan, Technical Director of the National Association of Assessing Officers. (See page 95.)

41 years old— and still "the tops"

Photo taken April, 1936 of Glenarm, from 14th to 19th Street, Denver, Colorado . . . paved with **Trinidad Native Lake Asphalt** in 1895—still in excellent condition.

It takes mighty good paving to stand the heavy, steady traffic of 41 years—particularly a prominent street like Glenarm, in Denver. But here's the proof that **Trinidad Native Lake Asphalt** is as good as we say it is . . . proof that you can see today if you're anywhere near Denver.

And not only does **Trinidad Native Lake Asphalt** last for years and years as a *new* pavement—but you can cover present old concrete, brick, granite or wood-block pavements and make *a new street for the price of an asphaltic top.*

It will pay to investigate. Send the coupon below, NOW.

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When some would-be Malcolm Campbell races his Bluebird through your town at seventy . . . it's a cinch to overhaul him with an Indian Motocycle.

But—and here's the real point we want to make—if you have a regular highway patrol, and people know you have, *there won't be speeding or reckless driving!* People drive within the law on highways they know are carefully patrolled. Leading communities still find Indian the best and most economical aid to highway safety.

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Because real estate is a commodity that is always within view, and cannot be lost, hidden, destroyed or stolen, it is almost universally believed that none of it escapes taxation. This is not the case, according to Mr. Noonan. "Unless the assessor has good maps showing each parcel and its location, he relies mainly on his memory to insure the assessment of all taxable land. And it is astounding how faulty memories can be."

As an example, Mr. Noonan relates a recent experience of several Connecticut municipalities. An aerial mapping concern was employed to furnish aerial tax maps in 13 towns of the state. After the work was completed and the maps were used by the assessors, it was found that in each town "the number of real estate parcels previously left off the assessment rolls was almost unbelievable." In no case were there fewer than 100, and in one case over 3,000 had been omitted. All the cities were comparatively small.

Every citizen has a common interest in insisting that his share of the tax burden be an equitable portion of the whole, comments Mr. Noonan. He should insist that all taxable property be correctly listed and valued. To reach this goal he must further insist on two prime essentials: that the assessing officer be selected on the basis of merit; and that he be provided with the necessary tools to do the job well. Adequate maps, he emphasizes, are among the indispensable tools. It is probable that the initial expense of securing a good set of tax maps will appear too high to be justified by many appropriating bodies, he adds, but investigations and reassessment projects are constantly revealing the fact that this policy is a very short-sighted, "penny-wise, pound foolish" economy. The loss through unlisted property, and the inevitable dissatisfaction of the taxpayers who are caught, greatly outweigh the benefits from the few dollars saved.

The Rhode Island Commission on Ways and Means in its latest report to the Governor recommended that the state either assist smaller jurisdictions to obtain adequate maps or furnish them outright when necessary.

City-College Cooperation for Improving Local Government

ESTABLISHMENT of a Bureau of Municipal Research in the city of Kalamazoo is viewed as a highly encouraging development by Robert M. Paige, Secretary of the Governmental Research Association. This new research bureau, he points out, is unique in that it is maintained jointly by the city and Kalamazoo College. The Bureau will be under the direction of Prof. R. F. Cornell, of the Political Science Department of the College, and City Manager E. C. Rutz. Kalamazoo has operated under a council-manager charter since 1918.

Undergraduate and graduate students majoring in political science are to be assigned to duty in the Bureau as a part of their college training. It is anticipated that the practical problems which will be placed before the Bureau by the City Manager and his department heads will give these students a realistic conception of the typical problems encountered by a city of 57,000 people. The City Manager has already given the Bureau several important assignments and is expecting the reports of the Bureau's investigations to throw light upon the solution of many administrative problems.

"This experiment in Kalamazoo could be copied by many other communities," comments Mr. Paige. "There are institutions of higher education in or near practically every city over 50,000 in the country, yet it is safe to say that only a few of the cities have used the research facilities of these institutions in studying community affairs. On the other hand, only a few universities and colleges have attempted to make instruction in government and political science realistic and practical by introducing their students to city officials and city problems. More universities and more cities should follow the example which Kalamazoo has set."

State Support of Schools on Increase

SUPPORT of the public schools from state revenue, rather than from local government funds, is indicated as an increasing trend throughout the country by a recent report of the U. S. Office of Education.

Revenue receipts by sources for 1929-30 are compared with those for 1933-34. The figures show that in 32 states, state support of schools has increased during the last two years, in 10 states by 10 per cent or more. The largest increases have been in the cases of: California, where schools during 1933-34 derived 48.7 per cent of their support from the state, as compared with 25.5 per cent in 1929-30; Indiana, where state support rose from 5.2 per cent to 27.0 per cent; North Carolina, which reported a rise from 19.5 per cent to 61.5 per cent; Ohio, from 3.7 per cent to 15.3 per cent; Oklahoma, from 10.1 to 29.4 per cent; Tennessee, from 23.7 to 42.5 per cent; Texas, from 38.9 to 51.5 per cent; and West Virginia, from 7.9 to 49.1 per cent.

In the entire country, state grants to schools have increased from 17.2 per cent to 23.4 per cent during the period covered.

Three states—Alabama, Georgia and Mississippi—during 1933 and 1934 received 10 per cent or more of their school funds from the Federal Government. Alabama and Georgia have, as a partial consequence, decreased state school appropriations, in each case by about 5 per cent; but Mississippi's state school appropriation has increased, by 5 per cent.

"Use of state funds for support of the schools has been advocated by educators for a number of years," comments Henry W. Toll, Executive Director of the Council of State Governments. "It was claimed to be the only way in which educational opportunities might be equalized. The acute effect of tax delinquencies, unemployment, decreased property values and tax limitations, which has rendered many localities incapable of school support, makes state support more important than ever before."

Recent City Manager Appointments

A. E. GARNER, for the past fourteen years City Clerk of Jacksonville, Texas, was appointed City Manager on May 26, to fill the vacancy created by J. Bryan Miller's promotion to Wichita Falls.

George Granger, an engineer in the Michigan Department of Conservation, was appointed City Manager of Grayling, Mich., on June 1.

C. A. Miller, former Manager of Grayling, was appointed City Manager of Kingsford, Mich., on June 1, to succeed Egnar S. Anderson.

J. Harry Nelson, Mayor of Bay City, Mich., since 1924, was appointed City Manager effective June 15. He fills the vacancy created by the resignation of George L. Lusk.

Selden F. McCreedy succeeds Peter Walraven as City Manager of Stevens Point, Wis.

CLARENCE E. RIDLEY,
Director, International City Managers' Association.

The Municipal Bond Market

Recent sales of new issues from the June numbers of *The Bond Buyer*:

Amount	Borrower and Purpose	Rate (%)	Term (Years)	Basis (%)
$300,000	Rhode Island, Public Works Loan of 1935	3	7 Avg.	1.38
700,000	Springfield, Mass., Municipal Relief	1.5	5.33 Avg.	1.46
125,000	Dutchess Co., N. Y., Home Relief	1.70	5.75 Avg.	1.63
100,000	Oakland, Calif., Harbor Improvement	1.75	5.33 Avg.	1.63
100,000	Fitchburg, Mass., Bridge and Wall Construction	1.75	1-10 Ser.	1.69
115,000	New Kensington, Pa., School	4	2.66-5.5 O.-A.	2.01
1,750,000	Hawaii, Refunding	2.10	5-9 Ser.	2.06
1,500,000	Denver, Colo., Sewage Disposal	2.25	15.85 Avg.	2.17
101,000	Pottsville, Pa., Municipal Building	2.5	13 Avg.	2.47
401,000	Austin, Texas, Electric Light and Sewer Revenue	3	4.5 Avg.	2.70
125,000	Toledo, Ohio, Garbage Disposal Plant, Refunding	4	8.5 Avg.	4
111,000	Pensacola, Fla., Water Revenue	4	9 Avg.	4.31

Kansas City now installing Park-O-Meters!

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$525 in one day . . .

* In Dallas, Texas, during the month of December, 1935, 1,000 meters accommodated 10,800 vehicles. A survey showed that during the same month in 1934, before Park-O-Meters had been installed, the same area had served only 4,100 vehicles in the same length of time. In addition to this increased turnover of parking space, the 1,000 meters earned as high as $525 in a single day!

*From figures published in "Public Safety", March, 1936.

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Anderson, Indiana

Prepared by
FRANK B. WILLIAMS
Author of "The Law of
City Planning and Zoning"

Zoning and Planning Notes

From Data collected
by the Zoning Committee
of New York
(233 Broadway)

Golf Club—Use of Water by Owner Bordering Upon Navigable Lake

MINNESOTA.—*Meyers v. Lafayette Club*, 266 N. W. 861 (Supreme Court, May 1, 1936).—The plaintiff Meyers is the owner of land, with residential buildings, on the shore of Lake Minnetonka, which is navigable. The defendant is a private golf club, also bordering on the lake. The defendant uses water from the lake for sprinkling its golf course and lawns, and for the ordinary domestic purposes. The plaintiff claims that the use by the defendant is excessive; and that it lowers the level of the lake to his disadvantage; also that the club use is not lawful.

The Court finds that the Club is entitled to the use of the water. A riparian owner of land bordering on a navigable lake has the right to use water from the lake for domestic, agricultural and other purposes, including sprinkling his grounds bordering upon the lake for the enjoyment and use of his property, provided such use does not substantially reduce the water level of the lake so as to damage the property of other riparian owners.

The use made of the water by the Club for sprinkling its golf course, maintained by the Club on its premises bordering on the lake, solely for the recreation of its members, was not unlawful or unreasonable, as respects the right of the riparian owners; such use not being commercial or artificial.

There is no claim in this case of any interference with the rights of the state or of the public.

The use by the defendant was not excessive, and did not unduly lower the level of the lake.

Residential District

NEW JERSEY.—*Romano v. Village of Ridgewood*. 184 Atl. 411 (Supreme Court, April 23, 1936).—The property involved in this case is in, but on the outskirts of, the village of Ridgewood, and is in an area zoned for residential use. The traffic past it for ten years or more had been heavy to the point of congestion. To relieve it the state took land for the construction of a new highway, thus dividing the traffic in such a fashion that a portion of the tract, upon which stood the buildings, formed what may be called an island, of considerable size, but hemmed in by highway on all sides. The result is that this part of the property is less valuable for residential purposes, and more valuable for a few kinds of business than it was. However, the factors that detract from the desirability of the property for residence differ in degree but not in kind from those incident to neighboring properties, the owners of which are opposed to a change in the ordinance.

The owner of the property, Romano, applied for permission to erect a gasoline station and restaurant on her land. This application was refused, and this Court holds that the refusal was proper. The ordinance was adopted nearly five years before, and other owners in the near vicinity bought their homes in reliance upon it. Neighboring owners have refused to sell for business purposes, at a profit. However well placed this Romano property, and that of a few other nearby owners, is for gas station and roadhouse uses, it cannot be said that the neighborhood has been given over to those or like uses or that it is fitted for general business purposes; and it cannot be denied that the proposed uses, with kindred others that would almost inevitably follow, would detract from the residential value of the adjacent territory. The Court, therefore, does not feel that, as Romano claims, the ordinance, as to the Romano property, is unreasonable, or that the local authorities were arbitrary in refusing to vary the ordinance.

The Court observes that Mrs. Romano stood by while the ordinance was being passed and for years thereafter, while others on the strength of it were making their investments and building their homes nearby; but to what extent, if any the decision was based upon that fact does not appear.

Parking

NEW YORK.—*Best and Co. v. Incorporated Village of Garden City*, 286 N. Y. S. 980 (Supreme Court, Appellate Division, April 13, 1936.)—The village ordinance requires that public parking places, except when under or controlled by the village, shall not be conducted unless approved by the board of zoning appeals. Best and Co. wishes to conduct a parking place adjacent to important streets and alongside its business buildings, for the purpose of temporary storage of the cars of its customers.

The Court holds that this space, although privately owned and limited to the use of the customers of Best and Co. without charge, is a public parking place and cannot be maintained without the permission of the board of zoning appeals. It is public because affected by a public interest, just as much as a theater, a dance hall, and the like. There will be an assembly of cars containing gasoline, which in the aggregate will be considerable, presenting a fire hazard; there will be an entrance and exit over the sidewalk endangering pedestrians; the entrance and exit must be to and from public streets, which will involve traffic regulations.

Lease for a Purpose Forbidden by the Zoning Ordinance

Tenement House Department Jurisdiction

NEW YORK.—*Ober v. Metropolitan Life Insurance Co.* 157 Misc. 869 (City Court of New York, March 26, 1935.)—This is an action for the breach of a lease given the plaintiff of a basement in a residential district in the city of New York to be occupied as a valet shop. The Court holds that the lease, being for a purpose forbidden at that locality by the Zoning Resolution of the city of New York, was void, and there can be no recovery by the tenant Ober for failure to be allowed to continue to occupy the premises leased for the illegal purpose, or by the landlord for failure to pay rent.

The Tenement House Department of the city of New York had notified the owner and the tenant that the basement was occupied as a valet shop illegally; and subsequently had told the tenant that if he removed his signs everything would be all right. The signs were so removed, and the Tenement House Department notified the tenant that the violation, placed on the premises, had been lifted.

But the Tenement House Department has no right to lift a violation. It has no authority to zone or rezone; its sole power is to enforce the zoning resolutions.

County Zoning

The first county zoning ordinance in Illinois, and one of the few urban type county ordinances in the Mid-West, was adopted by Du Page County in December, 1935; authority to zone unincorporated rural land having been granted by the State Legislature in June of the same year.

The bill was prepared under the direction of the Chicago Regional Planning Association. One of its most important features is the regulation of automobile wrecking establishments, or "graveyards," which usually locate along the main highway. The ordinance also requires all users causing vehicles of transportation to be parked for an hour or longer to provide and maintain space for such parking on the premises. Dance halls, taverns, commercially operated swimming pools and industries were the uses especially in mind in drafting such a regulation. This provision, often discussed by city planners, is an innovation in practice which in operation will be of interest.

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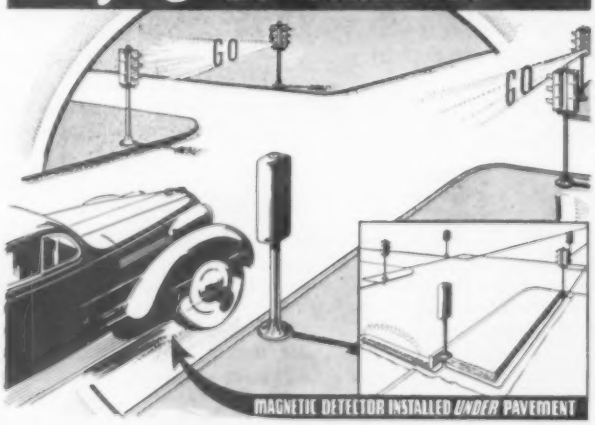

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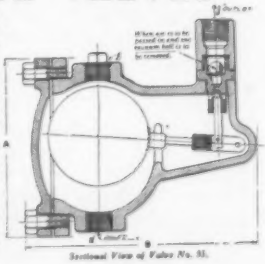
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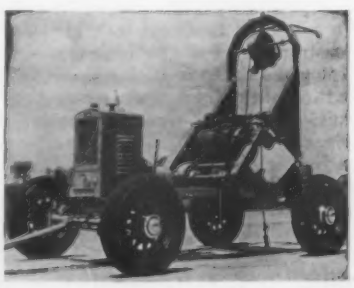

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The City's Legal Rights and Duties

Conducted by A. L. H. STREET, Attorney at Law

Accidents

City held not liable to motorist who drove against unlighted support of underpass at excessive speed with limited visibility (Georgia Court of Appeals: *Burd v. City of Atlanta*, 184 S. E. 412).

City held not liable to motorist who collided with unlighted safety island in street, where light went out shortly before accident (Michigan Supreme Court: *Jones v. City of Lansing*, 263 N. W. 757).

Civil Service

Members, clerk and sergeant-at-arms of Philadelphia Council held not covered by statutory prohibitions against political activities (Pennsylvania Supreme Court: *Freund v. Cox*, 183 Atl. 924).

Economy held not to justify discharge of ex-soldier from municipal employment, without notice or charges, where other clerks were subsequently employed to do same kind of work (Iowa Supreme Court: *Dickey v. King*, 263 N. W. 823).

Council Proceedings

Action taken by majority of Council after adjournment of meeting held invalid (Rhode Island Supreme Court: *McGroarty v. Ferretti*, 184 Atl. 508).

Request for roll call on adoption of resolution held too late when made after announcement that resolution had been adopted (Rhode Island Supreme Court: *McGroarty v. Ferretti*, 184 Atl. 508).

Consolidating Territory

Statute consolidating park districts into one district and spreading their debts over it upheld (Illinois Supreme Court: *Kocsis v. Chicago Park District*, 198 N. E. 847).

Fund Transfers

Taxpayer held not entitled to enjoin transfer from city water fund to general tax fund, unless water fund was encumbered to pay water bonds or his taxes thereby would be increased (Texas Court of Civil Appeals: *Young v. Taylor*, 92 S. W. 2d, 1075).

Initiative Measures

City's legislative body held empowered to reduce by ordinance salaries fixed by ordinance previously adopted by people as initiative measure (Oklahoma Supreme Court: *Granger v. City of Tulsa*, 51 Pac. 2d, 567).

Intoxicating Liquors

Liquor control act held not invalid because delegating to municipalities power to fix license fees, etc. (Utah Supreme Court: *Riggins v. District Court of Salt Lake County*, 51 Pac. 2d, 645).

Licenses

Ordinance forbidding grant of retail liquor license to delinquent taxpayer or for premises tax delinquent upheld (Kentucky Court of Appeals: *City of Somerset v. Newton*, 82 S. W. 2d, 306).

Ordinance permitting arbitrary refusal of licenses to conduct curb markets held void (Georgia Court of Appeals: *Jones v. City of Atlanta*, 179 S. E. 922).

Township prohibition of canvassing, distribution of circulars, etc., without a license upheld (New Jersey Supreme Court: *Dziatkiewicz v. Parker*, 178 Atl. 205).

Mobs

Under statute, defendant city held liable for damage done to retail liquor store by a mob, despite attempt of police to disperse mob (New York City Municipal Court: *Feinstein v. City of New York*, 283 N. Y. Supp. 335).

Municipal Bonds

Water and sewer bondholders held entitled to enjoin diversion of net revenues from fund for payment of bonds, without previously making written demand on city (United States Circuit Court of Appeals, Fourth Circuit: *George v. City of Asheville*, 80 Fed. 2d, 50).

Municipal Utilities

Unless statutes otherwise provide, a municipality is entitled to the same net profit as a private company, in operating an electric plant (New York Supreme Court, Appellate Division: *Village of Boonville v. Maltbie*, 283 N. Y. Supp. 460).

Ordinances

Statute authorizing city to prescribe a fine not exceeding $200 for violation of an ordinance held not to authorize fixing of a minimum, as well as maximum, fine (Newark, New Jersey, Third Criminal Court: *City of Newark v. Lafer*, 183 Atl. 905).

Pensions

Charter authority to provide pensions and relief for firemen and policemen held not to authorize payment of death benefits to their beneficiaries (California District Court of Appeal: *Richards v. Wheeler*, 51 Pac. 2d, 436).

Public Utilities

City held not estopped to oust electric system from streets through permitting power company to operate after expiration of franchise and until lighting contract expired (Missouri Supreme Court: *State v. Arkansas-Missouri Power Co.*, 93 S. W. 2d, 887).

Special Assessments

Under statute for refund of assessments for state highway through cities, etc., owner who paid assessment held entitled to refund as against his grantee (Michigan Supreme Court: *City of Grand Rapids v. Iosco Land Co.*, 263 N. W. 753).

Taxation

Arrangement under which plaintiff employed men to work for city in discharge of taxes due by loan association and in turn received credit on mortgage owing by him to association held invalid as against public policy (Michigan Supreme Court: *Skutt v. City of Grand Rapids*, 266 N. W. 344).

Statute exempting municipal "property" from taxation held not to exempt city from excise tax imposed on distributors of motor vehicle fuel (Iowa Supreme Court: *State v. City of Des Moines*, 266 N. W. 41).

Theatrical Censorship . .

Under New York statute, theater license held not revocable by city commissioner for immorality of plays, etc., presented, in absence of conviction for such presentation (New York Court of Appeals: *Holly Holding Corp. v. Moss*, 1 N. E. 2d, 359).

Transportation

Ordinance granting bus franchise to exclusion of taxicab jitney service upheld (Florida Supreme Court: *Jarrell v. Orlando Transit Co.*, 167 So. 664).

Venue

City held suable where cause of action against it arose, although beyond county of city's situs (Oklahoma Supreme Court: *Oklahoma City v. Ross*, 56 Pac. 2d, 775).

Water Departments

City held properly enjoined from discontinuing service through water pipe that had been used for many years without objection (Kentucky Court of Appeals: *City of Hazard v. Minge*, 92 S. W. 2d, 768).

City held not liable for flooding of land because maintaining dam on water supply stream, where overflow was due to an unprecedented flood (Oklahoma Supreme Court: *Oklahoma City v. Ross*, 56 Pac. 2d, 775).

Workmen's Compensation

Volunteer fireman injured on way to department headquarters to attend roll call after fire held entitled to award under workmen's compensation act (Michigan Supreme Court: *Massie v. City of Bessemer*, 266 N. W. 389).

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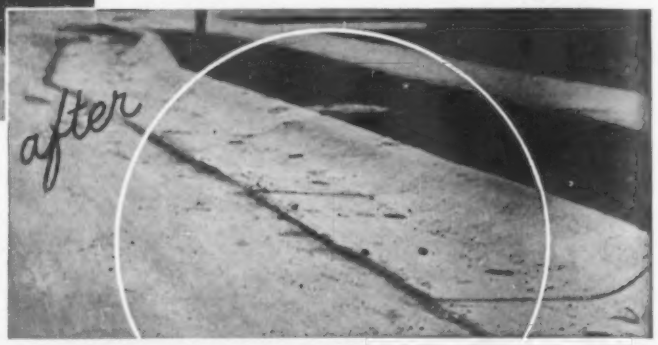

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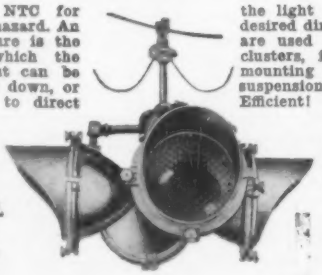

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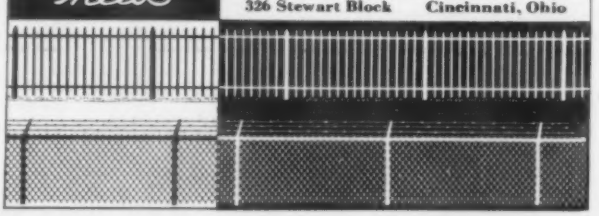

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Slums and Housing

Slums and Housing, with Special Reference to New York City: History—Conditions—Policy.—By James Ford, with the collaboration of Katherine Morrow and George N. Thompson, and an Appendix, Mainly Architectural, by I. N. Phelps Stokes. Prepared and published under the auspices of the Phelps-Stokes Fund. Harvard University Press, Cambridge, Mass., 1936. *2 volumes. xxiii + x + 1033 pp.* $10.00.

These imposing volumes are an exceptionally valuable contribution to our growing library of housing literature. Mr. Ford has delved deeply into the housing problem and sees it in all its interrelations. An attempt has been made to show the housing conditions of New York City in the perspective of history, ethics, sociology, and the other social sciences, and also to arrive at a synthesis of pertinent data from fields of study ordinarily remote from one another—medicine, law, architecture, education, engineering, criminology, economics, and political science. Contemporary conditions, their multitudinous causes, and measures for prevention and cure of present slum conditions, are all carefully considered and evaluated. Although New York is the center of attention, this work is far from being of purely local significance. A special staff of collaborators was assembled for the study, each of whom had previously dealt with housing on a nation-wide basis and no one of whom was a New Yorker. The special conditions of a number of our cities are cited as well as certain examples from abroad. The general conclusions and recommendations are for the most part applicable throughout the country. Public ownership of land, for example, is endorsed as a very important step toward the solution of the housing problem. Naturally, the local differences are not overlooked, and well-fitting local solutions are hoped for above all else, but there is no doubt that certain trends of policy should and will find country-wide duplication.

Housing

C is for Change
Of neighborhoods fine
From homes and great places
To rags, tatters and crime.

The "ABC" of housing by Arthur Bohnen is designed to bring that wandering attention which is so difficult to catch, to some of the roots and flowers of our bad municipal housekeeping, with special reference to Chicago. Each letter of the alphabet provides another thrust in the business of stirring wider and more active interest in the city's housing problem. 27 pp. (Apply to Metropolitan Housing Council, 228 No. LaSalle St., Chicago, Ill.)

Public Health

An *Introduction to Public Health.—By Harry S. Mustard, M.D., Associate Professor, Public Health Administration, The Johns Hopkins University; Director, Eastern Health District, Baltimore, Md.; Lecturer on Public Health and Sanitation, The Johns Hopkins Hospital School of Nursing. The Macmillan Company, New York*, 1935. *XI + 250 pp.* $2.50 *from* THE AMERICAN CITY.

This volume furnishes a background of factual information for the student of public health as well as an analysis of problems and interpretation of public health programs and practices. In a clear, almost outline, form Dr. Mustard explains the initial framework of our growing public health program, covering its background, its vital statistics and its organization and administration. Then he deals with a number of different specific problems in their relation to public health, namely, the acute communicable diseases, tuberculosis, the venereal diseases, sanitation, the individual and his hygiene, childbearing, the hygiene of infancy and young childhood, school health services, and the public health aspects of certain non-communicable diseases.

Town Planning

"In a nation that has come to look upon city building as the special and reserved province of land speculators, it is perhaps a strange and dangerous doctrine that towns should again be built to live in, but the New England ancestry of the idea is old and irreproachable." Tracy B. Augur, Assistant Director of Land Planning, T.V.A., has written an interesting article called "The Planning of the Town of Norris." His story deals with the planning of a new town, its designs, expectations, and results, actual and hoped-for. Norris was born of the practical necessity of providing housing for some 1,500 men engaged on the building of the Norris Dam, in Tennessee. There is a map, and pictures and floor plans of the housing are given. Reprinted from *American Architect*, April, 1936. 8 pp. (Apply to American Architect, 572 Madison Ave., New York.)

John Nolen's article on "City Planning in Europe," appearing in the June issue of *The American-German Review*, pays tribute to the advance of European town planning beyond that of the United States. European towns have a certain charm and beauty, and have provisions for pleasant home lives and inexpensive recreation, and opportunities for culture such as are inaccessible to most of our working people. The age of these European towns is a factor contributing to their charm. Development is favored by good local tax systems and by low wages in the construction industry. The people are educated in municipal development through museums and exhibits and publications. European towns, too, have a certain homogeneity of population which tends to aid a more organic town development. 4 pp. Yearly subscription to the *Review*, $2.00. (Apply to Carl Schurz Memorial Foundation, Inc., 225 South 15th St., Philadelphia, Pa.)

Purchasing

Russell Forbes, Commissioner of Purchase, New York City, has submitted his Report to Mayor F. H. LaGuardia on the Work of the Department of Purchase for the Year 1935. He feels that this two-year-old Department has survived remarkably well the numerous obstacles to be overcome and has made great improvements in its methods of purchasing. There is a steady decline in the volume of small open market orders and in increase in competitive contract purchasing, bringing quite a saving. At the same time the Department has done much toward eliminating excessive red tape in its method of doing business. In all purchasing, local producers receive preference. At present there is a 25 per cent differential in cost allowed for this purpose.

In this report the organization and work of each bureau is outlined, including a summary of two work relief projects sponsored by the Department. 85 pp. (Apply to The Department of Purchase, New York City.)

Construction Materials

The 1936 California Edition of the "Construction Materials Index" is designed to assist the practicing architect, structural engineer, purchasing agent and general contractor in obtaining useful data on methods and materials. There is an index of products and a listing of firms dealing in those products. There are two extensive bibliographies, one covering the essential data on business and construction and the other data on architectural and practical building design. Certified architects and principal contractors, engineers and purchasing agents are listed in groups according to district. A great deal of information on points of special interest such as construction regulations for buildings to qualify for insured loans under the Federal Housing Administration is included in this report. 204 pp. (Apply to The Construction Materials Research Co., 329 Minna St., San Francisco, Calif.)

Traffic Accidents and Regulation

The National Safety Council, Inc., has published its 1936 edition of "Accident Facts." There are 88 pages of tables, graphs, and diagrams which give all the factual material on the number, variety, and causes of accidents. In 1935, 100,000 persons were killed by accidents, twice as many as American soldiers killed in the World War. Those permanently disabled in 1935 accidents exceeded in number the total population of Rochester, N. Y. Motor-vehicle accidents were the "number one" cause in the 1935 accident list, accounting for 37,000 fatalities, 105,000 permanently disabling injuries, and 1,180,000 temporary disabilities. Other accidents occur through fire, occupation, different types of transportation, and many other sources. "The National Safety Council calls upon every American citizen to use his skill, his common sense, and his caution, to help lower the flood of accidents which is now killing us off at the rate of 100,000 a year!" 50c the single copy. Special rates on larger orders. (Apply to The National Safety Council, Inc., 20 N. Wacker Drive, Chicago, Ill.)

"A lot of us go to church on Sunday—drop our dime into the collection plate, thinking it will save a soul—snarl like a dog in the manger because we are asked to have our automobile tested and inspected in the interest of saving a life." This quotation is from a little pamphlet called "The Army of Stupid Indifference," which presents figures on the mechanical causes of accidents and gives the testimony of a number of chiefs of police on the necessity for safety inspection. The pamphlet points out that The Army of Stupid Indifference can be educated to a degree of understanding, interest and feeling and their destructiveness can be greatly reduced through the adoption of official Motor Vehicle Safety Inspection. 27 pp. (Apply to Bendix Products Corporation, South Bend, Ind.)

William Phelps Eno has published a 30-page pamphlet entitled "How Traffic Regulation May Be Improved in Town and Country." It is a supplement to "Simplification of Highway Traffic," which was published by the Eno Foundation for Highway Traffic Regulation, Incorporated, in 1929. The supplement brings this volume up to date, describing any improved methods of the last seven years. Copies can be procured from the Eno Foundation for Highway Traffic Regulation, Incorporated, Saugatuck, Fairfield County, Conn. $1.00 the single copy.

The Committee on Public Safety of the General Federation of Women's Clubs is conducting a Public Safety Program, one of the features of which is a pamphlet presenting with definiteness and force the subject, "Women and the War on Accidents." It explains the imperative necessity of cooperation by women's clubs in the cause of traffic safety, and evidences a thorough knowledge of the situation and of the means by which it may be met. It is a constructive piece of work. 16 pp. (Apply to the Chairman of the Committee, Mrs. Edward Hammett, 1209 N. Seventh St., Sheboygan, Wis.)

Taxation

The tenth Special Report of the State Tax Commission is the work of Joseph D. Silverherz, New York State Fellow in Taxation at Columbia University and Research Investigator of the New York State Tax Commission. He has divided the monograph into four sections. The first, entitled Historical Background, describes the development of property tax administration in the United States. The second section, and the one Mr. Silverherz considers the most valuable, outlines in detail the present assessment organization and assessment conditions in each of the states. Parts III and IV present an analysis of proposals for reform and a set of concluding recommendations for state administration with a suggested program for New York in particular. 396 pp. (Apply to New York State Department of Taxation and Finance, State Office Bldg., Albany, N. Y.)

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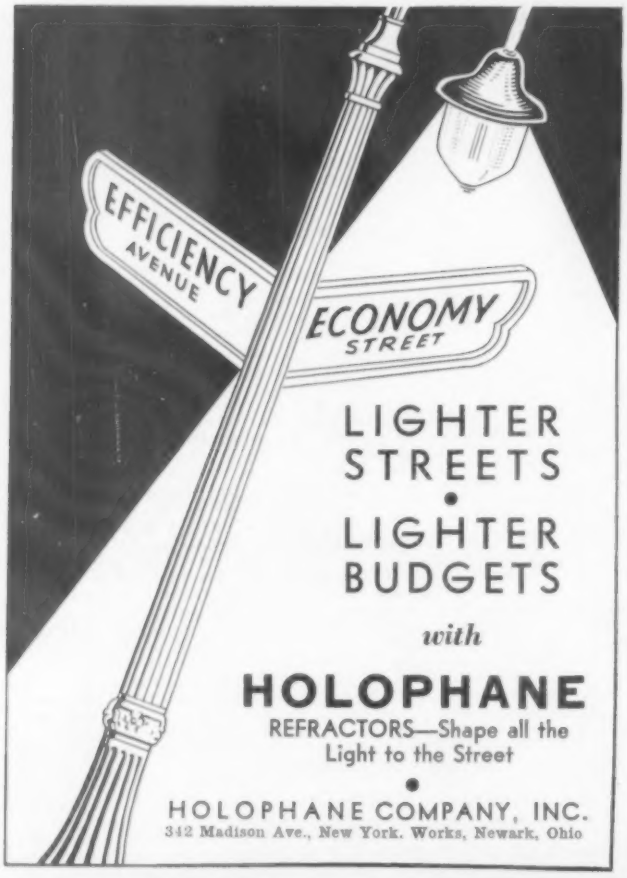

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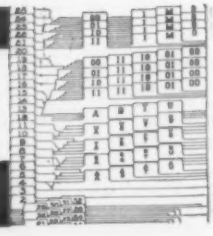

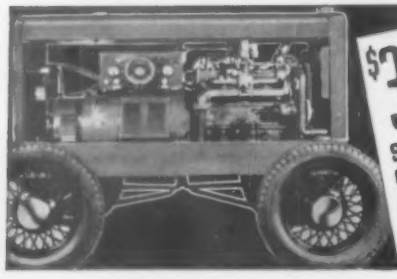

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Social Work

Social Work as a Profession.—By Esther Lucile Brown, Department of Statistics, Russell Sage Foundation. Second edition. Published by the Russell Sage Foundation, New York, 1936. 120 pp. 75c.

This monograph is designed to help vocational counselors and other persons interested in the profession of social work. The changing concept and present scope of social work is indicated, and the problems to be faced in the profession, namely, training, the number, demand and distribution of social workers, and the salaries, are faithfully presented. In conclusion the general trends in social work are summarized.

Other Reports Received

ATLANTA, GA.—Annual Report of the City Comptroller, 1935. 88 pp.

BELFAST, MAINE.—"Municipal Activities, 1935-1936." 65 pp.

CHICAGO, ILL.—"Budget Report on Engineering Work, 1936." 108 pp.

CICERO, ILL.—Annual report, 1936, Clyde Park District Commission, containing information regarding recreational activities and attendance at the facilities of the Clyde Park District. 12 mimeographed sheets.

EASTON, PA.—Annual Report for the Fiscal Year 1935. 117 pp.

NEW ROCHELLE, N. Y.—Annual Report of the City Auditor, 1935. 187 pp.

NEW YORK, N. Y.—"Traffic Surveys for Toll Bridges," by George Hartley. 12 pp.

NEW YORK, N. Y.—The Seventh Annual Report of the Regional Plan Association, May, 1936. 25 pp.

PHILADELPHIA, PA.—Art Jury, Annual Report, 1935. 62 pp. Illustrated.

ST. PAUL, MINN.—Annual Report, Civil Service Bureau, 1935. 39 pp.

SALINA, KANSAS.—City Clerk's Annual Report, year ending December 31, 1935. 31 pp.

SEATTLE, WASH.—Annual Report of the Comptroller, 1935. 128 pp.

SPOKANE, WASH.—Annual Report, City Auditor, 1935. 110 pp.

WEST BEND, WIS.—"Municipal Activities," for the year ending December 31, 1935. 44 pp.

Conventions -- When and Where

(Figures in parentheses following the name of the convention city indicate the estimated attendance other than local)

JULY 15-18.—PORTLAND, ORE.
American Society of Civil Engineers. Annual convention. Secretary, George T. Seabury, 33 West 39th Street, New York.

JULY 15-17.—RAPID CITY, S. DAK.
League of South Dakota Municipalities. Secretary, Dr. G. R. Breckenridge, University of South Dakota, Vermillion, S. Dak.

JULY 16-17.—ATLANTA, GA. (400)
Georgia Municipal Association. Annual meeting. (Ansley Hotel.) Secretary, Zach Arnold, Ansley Hotel, Atlanta, Ga.

JULY 20-24.—STILLWATER, OKLA.
Oklahoma Water and Sewage Conference. Annual conference. Secretary-Treasurer, H. J. Darcy, State Sanitary Engineer, Oklahoma City.

JULY 21-24.—TORONTO, ONT. (700)
International Association of Fire Chiefs. Annual convention. (Royal York Hotel.) Secretary, James J. Mulcahey, Yonkers, N. Y.

JULY 21-23.—NORRISTOWN, PA. (250)
Pennsylvania Chiefs of Police Association. Annual convention. Secretary, F. B. Titus, Lansdowne, Pa.

JULY 27-29.—VANCOUVER, B. C.
Union of Canadian Municipalities. Annual meeting. Secretary-Treasurer, Mrs. J. S. Giles, Lachute, Que.

JULY 28-30.—GLENS FALLS, N. Y. (250)
New York State Association of Chiefs of Police. Annual convention. Secretary-Treasurer, James L. Hyatt, 503 Western Avenue, Albany, N. Y.

AUGUST 2-8.—EVANSTON, ILL.
National Institute for Commercial and Trade Organization Executives. Annual session. (Northwestern University.) Secretary, John N. Van der Vries, 607 First National Bank Building, Chicago, Ill.

AUGUST 6-7.—POUGHKEEPSIE, N. Y. (1,000)
Eastern Association of Fire Chiefs. Annual convention. Secretary, Charles E. Clark, Box 217, Wayne, Pa.

AUGUST 18-20.—DAVENPORT, IOWA.
League of Iowa Municipalities. Annual convention. Secretary-Treasurer, Frank G. Pierce, Marshalltown, Iowa.

AUGUST 19-21.—CLEVELAND, OHIO.
American Water Works Association—Central States Section. Annual meeting. (Hotel Cleveland.) Secretary, H. L. Nelson, 2435 Koppers Building, Pittsburgh, Pa.

AUGUST 31, WEEK OF.—BUFFALO, N. Y.
Illuminating Engineering Society. Annual convention. (Statler Hotel.) General Secretary, D. W. Atwater, 29 West 39th Street, New York.

AUGUST 31-SEPTEMBER 3.—NEW YORK CITY. (350)
National Municipal Signal Association. Annual convention. (Pennsylvania Hotel.) Secretary, W. H. Harth, Columbia, S. C.

SEPTEMBER 1-4.—ANN ARBOR, MICH. (70)
Governmental Research Association. Annual conference. Secretary-Treasurer, Robert M. Paige, 850 East 58th Street, Chicago, Ill.

SEPTEMBER 2-4.—BOSTON, MASS. (300)
National Shade Tree Conference. Annual convention. (Hotel Statler.) Secretary-Treasurer, Dr. R. P. White, New Jersey Agricultural Experiment Station, New Brunswick, N. J.

SEPTEMBER 2-4.—DIGBY, N. S.
Union of Nova Scotia Municipalities. Annual convention. Secretary, Hon. Arthur Roberts, Bridgewater, N. S.

SEPTEMBER 2-4.—TORONTO, ONT.
Ontario Municipal Association. Annual meeting. Secretary-Treasurer, H. L. Brittain, 137 Wellington Street, West, Toronto, Ont.

SEPTEMBER 3-4.—MANDAN, N. DAK.
League of North Dakota Municipalities. Annual convention. Executive Secretary, Myron H. Atkinson, Bismarck, N. Dak.

SEPTEMBER 7-12.—WASHINGTON, D. C.
Third World Power Conference. Executive Secretary, Joel David Wolfsohn, National Power Policy Committee, Department of the Interior Building, Washington, D. C.

SEPTEMBER 9-12.—EAGLES MERE, PA. (250)
American Forestry Association. Annual meeting. (Hotel Lakeside.) Executive Secretary, Avid Butler, 1727 K St., N. W., Washington, D. C.

SEPTEMBER 14-17.—SANTA MONICA, CALIF. (1,000)
League of California Municipalities. Annual convention. Secretary, Richard Graves, 223 City Hall, San Francisco, Calif.

SEPTEMBER 14-17.—SANTA MONICA, CALIF.
California Sewage Works Association. Annual convention. Secretary, Fred D. Bowlus, 202 Law Building, Los Angeles, Calif.

SEPTEMBER 16-17.—PARIS, KY. (200)
The Kentucky Municipal League. Annual convention. Executive Secretary, Carl B. Wachs, Municipal Building, Lexington, Ky.

SEPTEMBER 16-18.—MUSKEGON, MICH. (350)
Michigan Municipal League. Annual meeting. Director, Harold D. Smith, University of Michigan, Ann Arbor, Mich.

SEPTEMBER 17-19.—DANVILLE, ILL. (500)
Illinois Municipal League. Annual convention. Secretary, A. D. McLarty, 500 East Capitol Avenue, Springfield, Ill.

SEPTEMBER 21-23.—DENVER, COLO. (80)
American Country Life Association. Annual conference. (Cosmopolitan Hotel.) Executive Secretary, Benson Y. Landis, 105 East 22d Street, New York.

SEPTEMBER 21-23.—CINCINNATI, OHIO. (350)
American Institute of Park Executives and the American Park Society. Annual convention. Executive Secretary, William H. Walker, 2234 Inglewood Place, South Bend, Ind.

SEPTEMBER 21-24.—WHITE SULPHUR SPRINGS, W. VA. (1,000)
American Transit Association and Affiliated Organizations. Annual convention. General Secretary, Guy C. Hecker, 292 Madison Avenue, New York.

SEPTEMBER 21-23.—DENVER, COLO. (75)
American Water Works Association—Rocky Mountain Section. Annual meeting. (Cosmopolitan Hotel.) Secretary-Treasurer, B. V. Howe, 437 State Office Building, Denver, Colo.

SEPTEMBER 21-24.—KANSAS CITY, MO.
International Association of Chiefs of Police. Annual convention. Secretary, George Black, Wilmington, Del.

SEPTEMBER 22-25.—NEW YORK CITY.
New England Water Works Association. Annual convention. (Pennsylvania Hotel.) Secretary, Frank J. Gifford, 613 Statler Building, Boston.

SEPTEMBER 24-25.—MANITOWOC, WIS.
League of Wisconsin Municipalities. Annual convention. Secretary, Frederick MacMillin, 114 North Carroll Street, Madison, Wis.

SEPTEMBER 28-30.—TORONTO, ONT.
American Society of Municipal Engineers. International Association of Public Works Officials. Public Works Congress. Executive Director, Frank W. Herring, 850 East 58th Street, Chicago, Ill.

OCTOBER 3.—WELLESLEY, MASS. (100)
Massachusetts Federation of Planning Boards. Annual conference. Secretary, Henry B. Alvord, 316 Huntington Avenue, Boston, Mass.

OCTOBER 5-9.—ATLANTIC CITY, N. J. (6,000)
National Safety Council. Annual Safety Congress and Exposition. Managing Director, W. H. Cameron, 20 North Wacker Drive, Chicago, Ill.

OCTOBER 12-15.—FORT SMITH, ARK.
American Water Works Association—Southwest Section. Annual convention. (Hotel Goldman.) Secretary-Treasurer, Lewis A. Quigley, Fort Worth, Texas.

OCTOBER 14-16.—ATLANTIC CITY, N. J.
Pennsylvania Water Works Association. Annual convention. (Haddon Hall.) Secretary, Dr. F. Herbert Snow, 327 Telegraph Building, Harrisburg, Pa.

OCTOBER 19-21.—RICHMOND, VA.
International City Managers' Association. Annual convention. Executive Director, Clarence E. Ridley, 850 East 58th Street, Chicago, Ill.

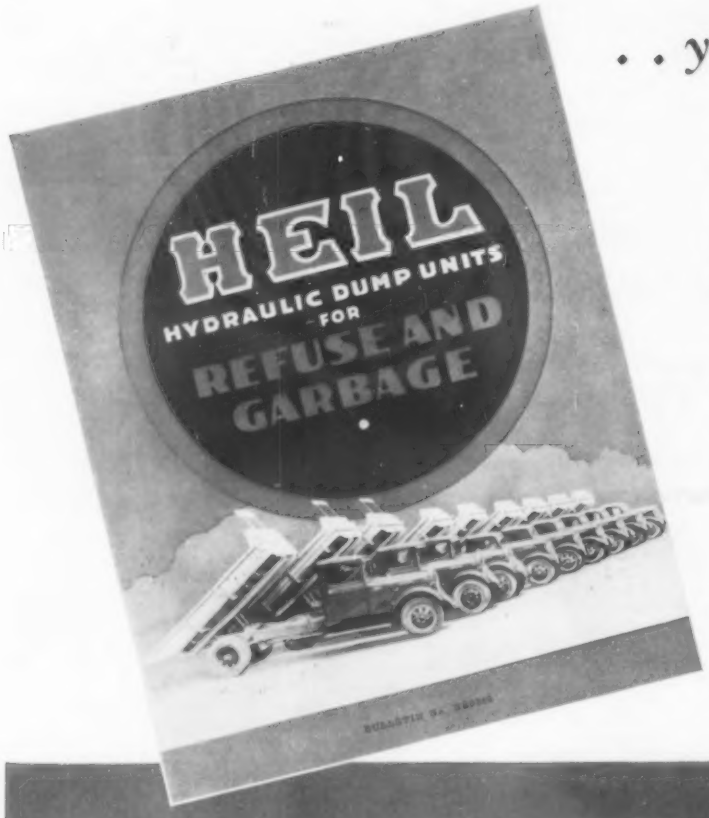
OCTOBER 20-23.—NEW ORLEANS, LA.
American Public Health Association. Annual meeting. Executive Secretary, Dr. Reginald M. Atwater, 50 West 50th Street, New York.

OCTOBER 21-24.—CINCINNATI, OHIO.
Civil Service Assembly of the United States and Canada. Annual assembly. Director, G. Lyle Belsley, 850 East 58th Street, Chicago, Ill.

OCTOBER 26-28.—KANSAS CITY, MO.
American Water Works Association—Missouri Valley Section. Annual meeting. Secretary, Earl L. Waterman, University of Iowa, Iowa City, Iowa.

OCTOBER 26-28.—CHARLOTTE, N. C.
American Water Works Association—North Carolina Section. Annual convention. (Hotel Charlotte.) Secretary, M. F. Trice, State Board of Health, Raleigh, N. C.

NOVEMBER 8-11.—OMAHA, NEBR.
National Association of Commercial Organization Secretaries. Annual convention. Secretary-Treasurer, R. W. Nelson, Chamber of Commerce, Cincinnati, Ohio.



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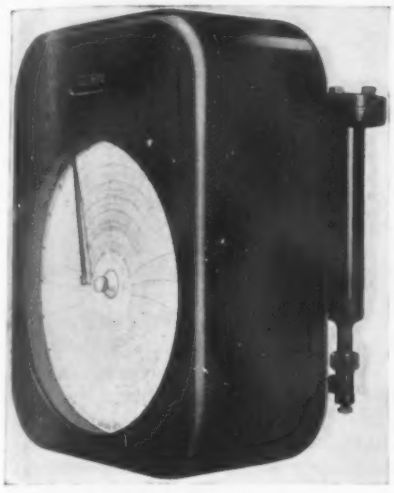
Items of Interest to City, Town and County Officials, and Others Concerned with the Economical Construction and Efficient Operation of Public Improvement Undertakings



THE COCHRANE ORIFICE METER

A Meter for Measuring the Flow of Liquids Through Pipe Lines

An orifice meter which is an accurate and simple instrument for measuring the flow of fluids through pipe lines has recently been announced by the Cochrane Corporation, 17th Street and Allegheny Avenue, Philadelphia, Pa. This meter is adapted to the measurement of steam, water, air and gas and such liquids and gases as sewage, etc. The flow through the orifice, flow nozzle or venturi tube sets up a differential pressure which is conveyed by piping to the U-tube manometer and measured in terms of rate-of-flow. When the flow rate changes, there is a change in differential pressure, which alters the level of mercury in the U-tube manometer. The large float on the mercury surface of the low pressure chamber is connected by linkage through a pressure-tight bearing to the pen arm which records the actual differential pressure, either direct or in terms of pounds, gallons, cubic feet or other desired units.

Features of this new orifice meter include a direct reading integrator, 12-inch diameter charts, a spring-wound or electric clock for driving the charts and the integrator, interchangable manometer tubes to permit altering meter capacity, a removable cover plate to permit cleaning of the chambers, a large float with high buoyance, a pressure-tight bearing of hardened stainless steel, a forged steel float chamber, adaptation to flush panel or rear mounting, pressure and temperature records on the same chart, with the flow and ranges of meter bodies from 1 inch of water maximum to 200 inches.

The meter may be mounted either against the wall with a suitable bracket, on a pipe standard, or flush upon a panel.

A New Hydraulic Test Laboratory

The Pomona Pump Co., Pomona, Calif., maintains a complete research department in a special building set apart from the rest of the buildings for re-study and final test of its products. Many devices have been designed for use in making accurate readings of performance as to speed, brake horsepower input, pressure head and water flow. To make these observations parallel those of actual operation in the field as closely as possible, the research laboratory is provided with a concrete well 135 feet deep and 4½ feet in diameter. Here Pomona pumps are tested at variable speeds from 500 to 3500 rpm with records obtained on integrating and automatic reading tachometers. Brake horsepower input is measured by a specially built vertical dynamometer, and driving torque is indicated by a stationary precision weighing apparatus that is accurate to 0.01-horsepower. Power input to the motor is measured by a calibrated watt-hour meter, and the over-all efficiency and power factor of the motor are readily determined in advance of shipment.

Pressure-head measurements are made by a specially constructed mercury column, reading direct both above and below a permanently fixed bench mark or datum line. Heads can be measured up to 320 feet with an accuracy of 0.01-foot. Water-flow calculations are taken from calibrated rectangular weirs of large capacity and very low approach velocity, through volumetrically calibrated venturi meters. Quantity flows up to 25,000 gallons per minute are measured on a finely divided vertical scale with a vernier gage reading to 0.0005-foot. Many other important facts, such as column friction head losses and shaft bearing losses with different types of column construction, are regularly obtained. This information is available to the purchaser in advance and permits accurate budgeting of actual operating costs.

Edmunds Appointed Assistant Manager

Jensen, Bowen and Farrell, Engineers, Ann Arbor, Mich., have announced the appointment of Everett L. Edmunds, Traffic and Transportation Consultant, as Assistant Manager of their Traffic and Transport Department.

FRESNO, CALIF., PROTECTS ITS SHADE TREES WITH USE OF A BEAN SPRAYER

The sprayer is equipped with Goodrich rubber tires, and the Goodrich 100-foot hose throws a spray to the tops of these trees 85 to 100 feet high. Sherwin-Williams spray materials are used

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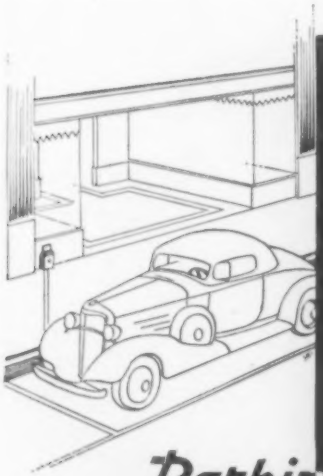
ACTUAL LOSS to business as a direct result of the abuse of parking regulations has now been tabulated in survey form. Made by Mr. Ralph T. Dorsey, Traffic Engineer of the City of Los Angeles, in the downtown section of that city, this survey reveals an amazing situation and clearly indicates that something drastic must be done to stop the economic loss to merchants, public and motorist due to the abuse of parking privileges. A limited number of copies of the complete survey are available to interested parties. Send for it now and for full details of the Parking Tax-O-Meter —the solution to the parking problems in your city.



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Why buy a MOWER?

that does but half the job?

The GRAVELY will work under every condition. The Power Driven Sickle Mower, illustrated, will cut everything . . . the rough places . . . spots where you've had to use hand scythes . . . even sprouts a full ½-inch thick . . . and a great big swath every time.

To this same tractor you can attach a 30-inch Reel Type Mower . . . two mowers for the price of one.

Write for Facts

GRAVELY MOTOR PLOW AND CULTIVATOR CO.
Box 705
Dunbar
W. Va.

WHY PAY MORE?

Once you have tried The Lenox, you will agree that it is unwise to pay more than Lenox rates for first class hotel accommodations. Everything provided for your comfort, convenience and relaxation — and marvelous food at low fixed prices.

RATES

Single .....$1.50 to $3.00
Double .....$2.50 to $5.00
Family Suites.....$5.00 up

Send for free AAA map and folder containing handy map of downtown Buffalo.

Clarence A. Miner, President

HOTEL LENOX

140 NORTH ST. NEAR DELAWARE
BUFFALO, N. Y.

THE NEW DODGE DUMP-TRUCK

A New Dump-Truck

The above illustration shows the new special Dodge hydraulic dump-truck built by Dodge Division of Chrysler Corporation, Detroit, Mich., for quick loading and unloading of various types of loads. This truck may be used in landscape gardening, park and boulevard maintenance, contracting, and numerous other fields. By removing two pins, the hinged side and tail-gate can be lowered to form a wide platform body. By lowering one side, wheelbarrow loads may be wheeled upon a plank walk to the truck platform. Another feature provided by the lowering of one side is that dirt may be shoveled on or off more easily. This type of body is said to save both time and money in the handling of all types of loads.

Minneapolis-Honeywell Co. Expands

The Minneapolis-Honeywell Regulator Co., Minneapolis, Minn., has announced the recent enlargement of its plant and main office in Minneapolis, as well as several changes and additions to its branch offices in Detroit, Mich., Providence, R. I., Atlanta, Ga., and in its European branch office in Amsterdam, Holland.

Volume and Pressure Register for Use with Mechanical Meters

A recorder that provides a permanent automatic, detailed record of the volume of water flowing and the pressure at which it is being delivered has been developed by the Badger Meter Manufacturing Co., Milwaukee, Wis. This device is for use with mechanical meters and furnishes a chart reading volume on the inner section and pressure on the outer section. Reading from the zero or base line, each step multiplied by a constant for the particular meter in use, equals the accumulated registration, while the circumferential line represents time. On large registrations, when the pen reaches the outer line it automatically returns to the base line and continues registration.

This recorder is a combination of a specially designed recording chart driven by a Seth Thomas 24-hour or 7-day clock, with an electrically controlled contactor head located in the mechanical meter which transmits the volume registration electrically. The pressure registration is transmitted through a piped water column, or for great distances it also is transmitted electrically.

The contactor head, mounted on the register base of the meter is synchronized with the mechanical meter register at a predetermined number of gallons, so that the momentary closing of the electric contactor transmits impulses to the solenoid in the recorder cabinet and records them on the permanent chart. The reading is made directly from the chart and corrected by a constant depending on the meter.

This recorder is adaptable to any large-sized disc, turbine and compound meters such as are used in industrial plants and for station meters.

Propeller Pumps for Handling Large Quantities of Water

Propeller pumps which can handle large quantities of water at heads below the efficient range of centrifugal pumps, and because of their portability and freedom from complications of priming have a wide range of applications, have been brought out by Fairbanks, Morse & Co., 900 South Wabash Avenue, Chicago, Ill. This type of propeller pump may be applied to storm-water disposal, low head or primary municipal pumping, unwatering of excavations, cofferdams, as circulating pumps in many industrial processes, etc. Installation of a propeller pump is simple, and no special accuracy of alignment is required, for the unit is a complete structure in itself.

This propeller pump consists essentially of a runner of the propeller type operating in a pump body provided with properly designed entrance and discharge guide vanes called diffusers. The pump is suspended from a floor plate by means of a column so that the runner will always be submerged in the water of the canal or sump below. This pump does not require priming, and it is a simple matter to provide automatic operation by means of ordinary float switches.

Above the base plate at the floor level the pump is provided with a motor-supporting stand or ring. Standard construction is based on the use of a Fairbanks-Morse hollow-shaft motor with suitable thrust bearings built into the motor. All downward thrust of the shaft and impeller plus the hydraulic load is thus carried on the bearings built especially for that purpose. The discharge column is made of heavy sheet steel of proper thickness for rigidity and ample strength. The entire column is dipped in hot asphaltum, which provides a protective coating both inside and out.

OUTDOOR INSTALLATION OF A F-M 12-INCH VERTICAL PROPELLER PUMP

A tube of extra-heavy pipe completely encloses the shaft from the top of the pump bowl through the base plate. The tube is provided with a number of guide bearings to eliminate any possibility of vibration.

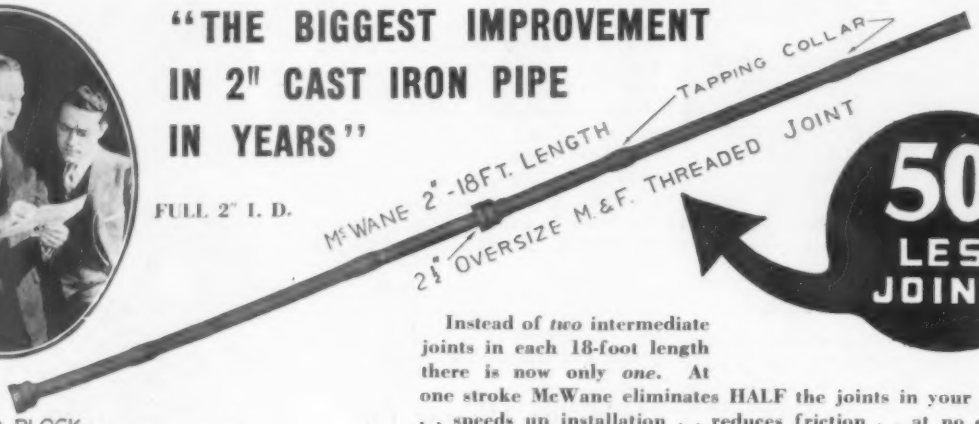
The shaft bearings are of high-grade phosphor bronze, and they are supported and located in the shaft tube at suitable intervals and are lubricated by means of oil fed into the tube at the top. A special grade of steel shafting having high torsional strength is used, which gives a factor of safety under all load conditions. The pump bowl consists of two castings of close-grained iron, and the propeller is a solid bronze casting consisting of a hub, and of such hydraulic design as to secure high efficiencies when handling large quantities of water. These pumps are made in sizes from 8-inch to 30-inch.

AN UNLUCKY SEVEN FOR CRIMINALS AND TRAFFIC HOGS IN ASHEVILLE, N. C.

The new fleet of Ford V-8 police cars added to the police patrol in North Carolina's resort city

"THE BIGGEST IMPROVEMENT IN 2" CAST IRON PIPE IN YEARS"

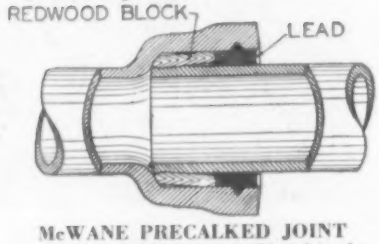
FULL 2" I. D.



50% LESS JOINTS

Instead of *two* intermediate joints in each 18-foot length there is now only *one*. At one stroke McWane eliminates HALF the joints in your lines . . speeds up installation . . reduces friction . . at no extra cost.

And casting these 9-foot lengths *mechanically* McWane steps up tensile and transverse strengths . . . makes it easy to lay this *permanent* pipe around curves without fittings. Get all the facts. Write for folder WG-36!



McWANE PRECALKED JOINT

Yes, the precalked joint is shipped in the bell. All you do is socket the spigot and finish calking. Sure! Self-tightening! Speedy! Permanent!

McWANE CAST IRON PIPE CO. BIRMINGHAM ALABAMA

PACIFIC STATES CAST IRON PIPE CO. PROVO, UTAH

Branch Offices: Chicago, Dallas, Denver, Kansas City, New York Portland, Ore., Salt Lake City, San Francisco

over 20,000,000 FEET IN USE

Dorr Company Consolidates Offices

With the moving of its main office in New York City to 570 Lexington Avenue, the Dorr Company will complete the transfer of all major functions, including engineering, to the East. Research and development will continue to be handled at the Westport Mill, Westport, Conn. The new Dorr executive and sales offices will occupy the entire ninth floor connecting with the engineering department and drafting room on the floor below.

An important feature of the new quarters is to be a large reference library open to clients and friends, and an exhibit of new scale working models of Dorr equipment, including a replica in miniature of the initial Dorr classifier invented and developed in 1904.

Truck Production Capacity Increased

Increased production capacity on Reo Speed Wagons and trucks, as well as substantial economies, will result from a consolidation of manufacturing departments just announced by R. A. DeVlieg, Vice-President in charge of manufacturing of the Reo Motor Car Co., Lansing, Mich. Completion of this phase of Reo's improvement program makes it possible to concentrate the manufacture of truck chassis in the main plant, and at the same time increase truck production facilities and bring about many economies, according to Mr. DeVlieg. Moving operations are already under way and will be completed within 90 days without interrupting production. The former truck plant will be used for storage purposes and to house a number of the non-productive departments.

Changes in Morris Machine Works Personnel

Morris Machine Works, Baldwinsville, N. Y., has announced the election of Carl Lager as President, and Pierce J. McAuliffe as Vice-President and General Manager. Mr. Lager joined the organization as its Chief Engineer forty-six years ago, and during this period has been a leading factor in the advance in the development and application of centrifugal pumps. Mr. McAuliffe joined the company in 1910 as designer of hydraulic dredging equipment. Since 1920 he has been New York representative of Morris Machine Works. Both will be located in Baldwinsville.

A METRIC IRONCASE SEWAGE GAS METER

New Development in Sewage Gas Meters

To provide increased insurance against the possible corrosive action of the constituents of sewage gases, primarily methane and carbon dioxide, with a small percentage of hydrogen sulphide, the American Meter Co., 60 East 42nd Street, New York, has announced a recent improvement in meters designed for measuring these gases.

All parts of the Metric Ironcase sewage gas meter coming in contact with the gas are now either plated or made of special materials to minimize the effect of hydrogen sulphide when combined with the water vapor content. This feature is in addition to anti-corrosive precautions already characterizing the line of sewage gas meters. The design and construction features of these meters are fully described in Catalog EG40 which may be secured from the manufacturer.

Permanent Marking of Thoroughfares

As a means of reducing the ever-present painting of streets for automobile and pedestrian traffic control, Thompson Products, Inc., Cleveland, Ohio, has announced the new Thompson traffic marker. This marker is made of one-piece, heat-treated aluminum alloy forging and is claimed by the manufacturer to be unbreakable under heavy traffic, and wears for the life of the pavement. It is made of a white non-corrosive metal, contrasts strongly with the pavement, has high visibility and reflects light brilliantly, day or night. Its safety ribs protect pedestrians against slipping, and it may be put into any pavement, including asphalt, brick, concrete or blockstone. Correctly installed, it will not come out under any circumstances.

These traffic markers are made in square and round types. The square type, which measures 5 x 5 inches, helps to give the effect of a straight, unbroken line and is particularly adapted to asphalt pavement. The round-head marker, 3¾ inches in diameter, is suitable for all kinds of pavement, and its round design lends itself exceptionally well to the formation of words in the pavement, in addition to straight lines for every purpose.

THE ROUND-TYPE THOMPSON TRAFFIC MARKER, ADAPTED TO THE FORMATION OF WORDS

Cyrus H. McCormick of International Harvester Dies

Cyrus H. McCormick, retired Chairman of the Board of Directors of the International Harvester Co., Chicago, Ill., died June 2, at his home in Lake Forest, Ill. Mr. McCormick was a principal factor in the formation of the Harvester Co. in 1902, and its President from that time until 1918, when he became Chairman of the Board, an office which he held until his retirement in September, 1935.

Mr. McCormick attended the Chicago public schools and Princeton University. After college he entered the McCormick Harvesting Machine Co., of which his father was the head. In 1884 he succeeded to the presidency of the McCormick Co. In 1902 the McCormick Co. united with others to form the International Harvester Co., and Mr. McCormick was elected the company's first President. During his 33 years as President and Chairman of the Harvester Co. Mr. McCormick pioneered many activities in the Harvester organization which have borne abundant fruit in their application to industry in general.

Mercer Advanced by Armco

Harry V. Mercer has been appointed to the newly-created position of Advertising Manager for the American Rolling Mill Co., Middletown, Ohio, according to a recent announcement by Bennett Chapple, Vice-President and Director of Publicity.

Mr. Mercer has been associated with Armco for 20 years, during 14 of which he has been identified with practically all phases of the company's publicity and advertising. In his new position, he will administrate Armco's program of advertising.

Addition to Line of Road Machines

The addition of tandem drive speed patrols to its line of road machines has been announced by the Allis-Chalmers Manufacturing Co., Tractor Division, Milwaukee, Wis. These new patrols come in two sizes, one having 42 horsepower and the other 54 horsepower. Among their outstanding features are a wide front axle for greater stability, wear take-up provision on all vital points, ball-and-socket connections, and hydraulic brakes of the internal expanding type. A complete range of tire equipment is available, including both low- and high-pressure types in 4- or 8-wheel tandem assemblies to meet a wide variety of working conditions.

Model 42 weighs 15,350 pounds, and Model 54 weighs 17,130 pounds. Speeds range from 2.3 to 10 miles per hour. An extra-long blade base allows for maximum effective blade pressure, and a large circle, 5 feet 3 inches in diameter, provides for rigid moldboard mounting and chatterproof performance. A gear drive enclosed in an all-welded case transmits power from the drive-shaft to the final drive axles.

New 12-Yard Scraper

A new model 12-yard Carryall scraper, Type Y, for use with RD-8 Caterpillar tractors, has been announced by R. G. LeTourneau, Inc., Peoria, Ill. In design the new model is similar to the former 12-yard Carryall. It is cable-controlled by means of a two-drum LeTourneau power control unit mounted at the rear of the pulling tractor. It embodies the same positive, accurate unloading methods, namely, the use of a sliding tailgate to force material out of the bowl. The cutting blade of 10 feet in width, bowl dimensions, and dirt-carrying capacity are the same.

The major change is in the tire size, which has been increased from 13.50 x 20 to 18.00 x 24. The larger tires greatly reduce draft on the tractor and provide a much larger ground contact, so the new Carryall will stay on top of soft mud and fine sand where smaller-tired rigs bog down. To accommodate the larger tires, the front yoke on the Type Y has been heightened, resulting in greater clearance and easier turning. The return spring assembly is housed in the tailgate, itself, and the reserve cable reel is mounted atop the tailgate, making it handier to pull new cable through the sheaves. The ball bearings in these sheaves are especially designed with a built-in, absolutely dustproof seal, which insures free rolling cable and long bearing life. This model can also be operated in tandem behind a single tractor equipped with a 4-drum power control unit. The rear drawbar for tandem hook-up is standard equipment.

THE NEW ALLIS-CHALMERS TANDEM DRIVE SPEED PATROL

BE SURE WITH STABILIZATION

LEFT—*Route 124, Indiana. Thin bituminous mat after seven months on stabilized base, in good condition after spring break-up.*

ABOVE—*Route 124, Indiana. Calcium-chloride-stabilized surface ten months after construction.*

A CHAIN is as strong as its weakest link—and a road as strong as its foundation.

During the past few years, it has become increasingly evident that a high-type surface should never be built on a weak base.

Stabilization with calcium chloride provides a base course of greatly increased supporting value, on which a high-type surface can be placed with confidence. That's why prominent engineers the country over are stabilizing their roads as the first step to permanent improvement.

While stabilized roads make better bases for higher type surfaces, do not assume that additional surfacing is always essential. A stabilized road is, in itself an enduring, all-weather, dustless highway—in most cases ample for traffic needs and decidedly more economical.

Thousands of miles of stabilized roads are now in use and functioning perfectly under traffic with no other surface than the natural soil mortars produced by the stabilization process. Where extremely high traffic counts or especially heavy loads are carried, you need only to add the higher type hard surfaces necessary to carry them.

TECHNICAL BULLETINS

Free Be sure with stabilization. Write today for technical bulletins and literature based on latest findings of soil engineers.

CALCIUM CHLORIDE ASSOCIATION

THE COLUMBIA ALKALI CORPORATION.....Barberton, Ohio
THE DOW CHEMICAL COMPANY.....Midland, Michigan
MICHIGAN ALKALI COMPANY.....60 E. 42nd St., New York City
SOLVAY SALES CORPORATION.....40 Rector St., New York City

NO MATTER WHAT FUTURE SURFACE "STABILIZE FIRST"

CALCIUM CHLORIDE

FOR STABILIZING ROAD SURFACES

Kahn Vice-President of Republic Steel Corporation

Julius Kahn, who has been President since his founding of the Truscon Steel Corporation, 33 years ago, has resigned his position to become Vice-President in charge of product development of the Republic Steel Corporation, Cleveland, Ohio. Forrest H. Ramage has been promoted from Assistant Manager of the Advertising and Sales Promotion Division to Sales Promotion Manager, and will work in conjunction with the new Product Development Division. Stanley A. Knisely, formerly Manager of the Advertising and Sales Promotion Division, has been named Director of Advertising, with direct supervision of all advertising of the Corporation and its subsidiaries, and Chester W. Ruth has been made Assistant Director of Advertising.

Huber Joins Clay Co.

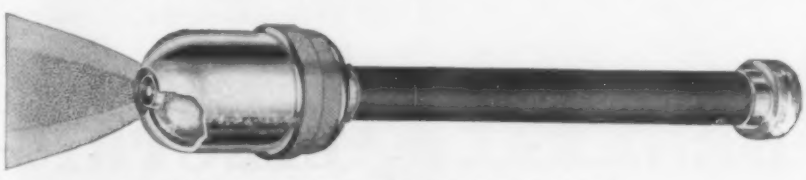
John H. Huber, former Engineer of Bridges and Grade Crossings and Assistant First Deputy Commissioner of Highways, New York State Department of Public Works, is now associated with the Robinson Clay Product Co. of Akron, Ohio, and Empire State Bldg., New York.

An All-Purpose Fire Department Nozzle

The Akron Vapor Nozzle, which converts ordinary water from any hose or pipe line into a heavy fire-blanketing and extinguishing vapor, has recently been announced by the Akron Brass Manufacturing Co., Inc., Wooster, Ohio. This nozzle breaks up the water into a state so fine that it is beyond that of spray or mist. The vapor may be directed so that it settles and sets as a blanket or separator between the flame and the oil or other inflammable fluids, excluding oxygen.

Through the vapor nozzle medium, water is finely broken up into individual whirling fluid particles which, when coming into contact with heat, expand instantly in proportion to the intensity of the heat, which expansion science tells us is 1,700 times the volume of water if perfectly vaporized. Thus, the hotter the fire, the more quickly and effectively is a blanket of steam spread over the fire, with a minimum supply of water.

The duplex rotors, producing two distinct conical-shaped vapors, are intended to thoroughly cover the area with a double wall of vapor. The forward rotor, being approximately one-half the size of the rear rotor, operating at a terrific speed, is intended to penetrate the fire, and the temperature being reduced between the inner and outer wall of vapor results in the outer vapor eliminating possible flashbacks as the unit is moved over the surface of fire, leaving its blanket of steam, excluding oxygen and eliminating fire.

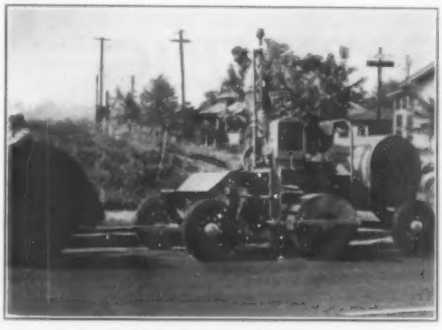


THE AKRON ALL-PURPOSE FIRE DEPARTMENT NOZZLE

New Sprinkler-Sweeper

An addition to the line of Universal road sweepers has recently been announced by the Frank G. Hough Co., 919 North Michigan Avenue, Chicago, Ill. This new unit is the Universal-Hough Sprinkler-Sweeper, which can be pulled by any small tractor or truck and sweeps to the right or the left. It is powered by its own engine, which operates the brush as well as a rotary gear pump for supplying the water pressure. Its tank holds 200 gallons of water, which is sprayed ahead of the brush. The machine will sweep without raising any appreciable dust at the rate of 5 to 6 miles an hour, according to the manufacturer. Each filling of water is sufficient for from 8 to 10 miles of sweeping.

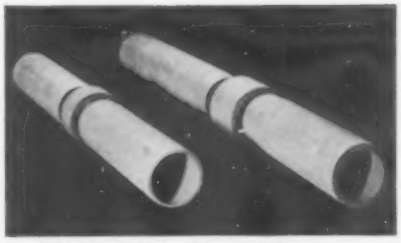
Complete details on this new unit may be secured by contractors, state and county highway engineers and municipal officials direct from the Frank G. Hough Co.



HOUGH-UNIVERSAL STREET SWEEPER

New Use of Activated Carbon

A new use developed within the past two years for Nuchar, an activated carbon manufactured by the Industrial Chemical Sales Co., Inc., 230 Park Ave., New York, is described in an article, "Sewage Plant Operation with Activated Carbon," by Noel Statham, President of this company, which appears in the June issue of *Taste and Odor Control*. A copy will be send you on request to this company.



TRANSITE KORDUCT (LEFT), A THIN-WALLED COMPANION FOR TRANSITE CONDUIT (RIGHT)

New Form of Transite Conduit

Transite Korduct, a new thin-walled companion to Transite conduit, has been announced by Johns-Manville Corporation, 22 East 40th Street, New York. This new product, identical with Transite conduit, except in thickness, is an asbestos-cement product formed under high pressure on a polished steel mandrel, which assures a smooth inner surface. Transite conduit was created to provide a conduit sufficiently strong and resistant to enable the laying of underground duct systems without a concrete protective envelope, and also to provide permanence in an electrical conduit used in exposed locations.

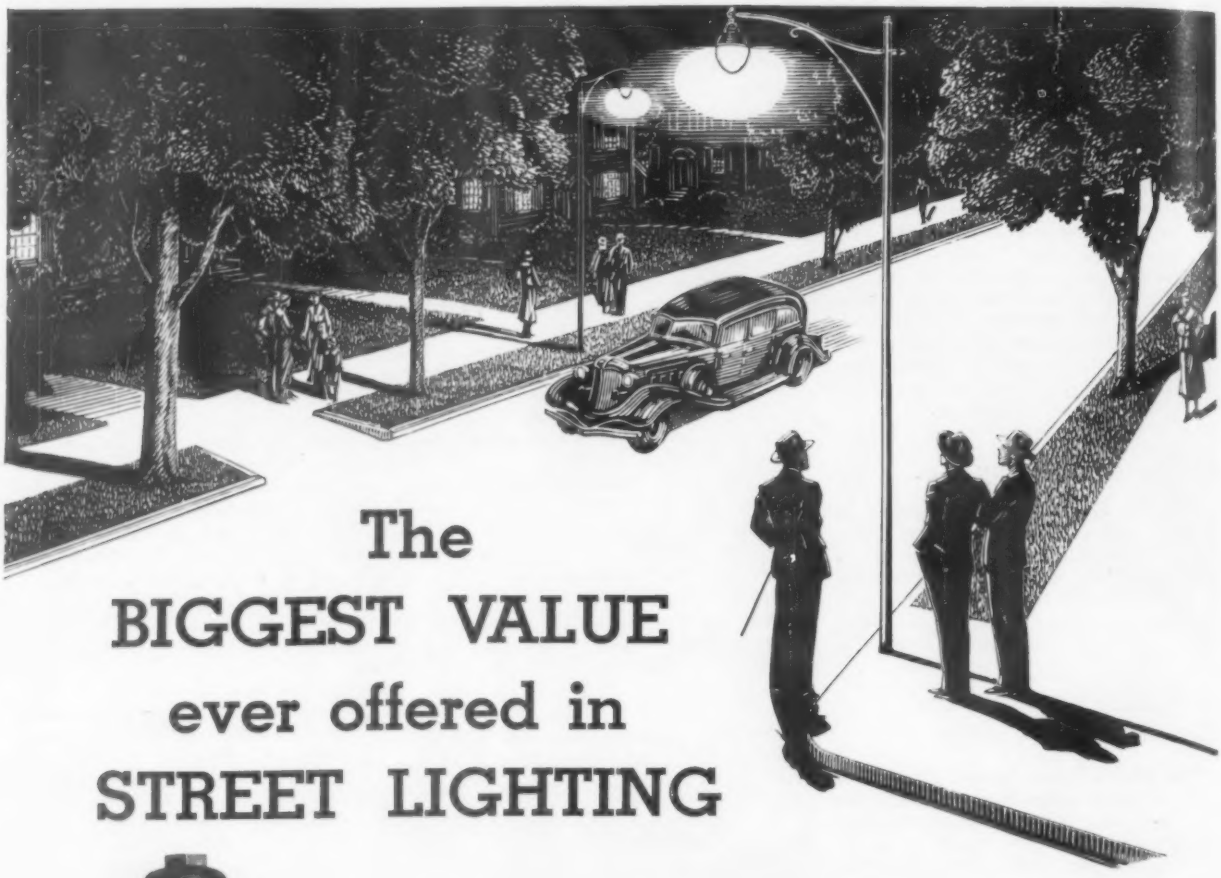
Korduct has been introduced in its thin-walled form to enable the economical application of Transite's permanence and other inherent qualities to duct systems that are enclosed in concrete. It is rot-proof and incombustible. It is immune to electrolysis and highly resistant to all forms of corrosion. Its rate of heat dissipation is high, and cables are easily pulled through its smooth interior. This new material is recommended for use on all multiple duct transmission systems, in tunnels, bridge structures or dams, and wherever the service calls for concreting in.

A New Safety Hand Signal

Ringsignal, a new hand signaling device, has been developed by Traffic Equipment Corporation, 557 West 42nd Street, New York, to help solve the problem of hand signaling by the drivers of motor vehicles. Since statistics tend to prove that two-thirds of all motor accidents occur after nightfall, the Ringsignal is even more effective after dark, because in the beams of headlights of a car following, it reflects back to the driver as far as 500 feet behind, a brilliant light which calls attention to whatever signals are being made. The ring is adjustable to bare or gloved fingers and has been designed to safeguard life and property, and to prevent accidents and resulting damage.

Information on this light-reflecting signal, which may be worn on the palm or on the back of the hand, may be secured by writing the manufacturer direct.

Voters judge your administration by the good it does



The BIGGEST VALUE ever offered in STREET LIGHTING

The General Electric Form 79R luminaire—puts 90 per cent more light on the street and at the same time suppresses glare

Here is a new luminaire which will help every city get the most from its street-lighting budget. It is worth discussing at your next city council meeting. Take the matter up with your power company, or with General Electric, Schenectady, N. Y.

This new luminaire, the G-E Form 79R, brings two very important improvements. First, it puts about 90 per cent more light *on* the street than the *best* luminaire of older design; it suppresses glare; it shields homes from direct rays of light. Second, it materially cuts maintenance because of the strength of the glass refractor, and because this refractor is sealed onto the aluminum reflector, minimizing cleaning and glassware breakage.

Send for our new publication on the Form 79R today. Then carefully study your present street-lighting plans. Make sure that when new equipment is purchased, it is strictly modern. Check to see if it will not pay you—in safety, comfort, and money—to modernize, over a 5-year period, your entire street-lighting system.

General Electric, Dept. 6A201
Schenectady, N. Y.

Please send me full information on your new Form 79R street-lighting luminaire (Publication GEA-2276A).

Name.....

Address.....

City.....State.....

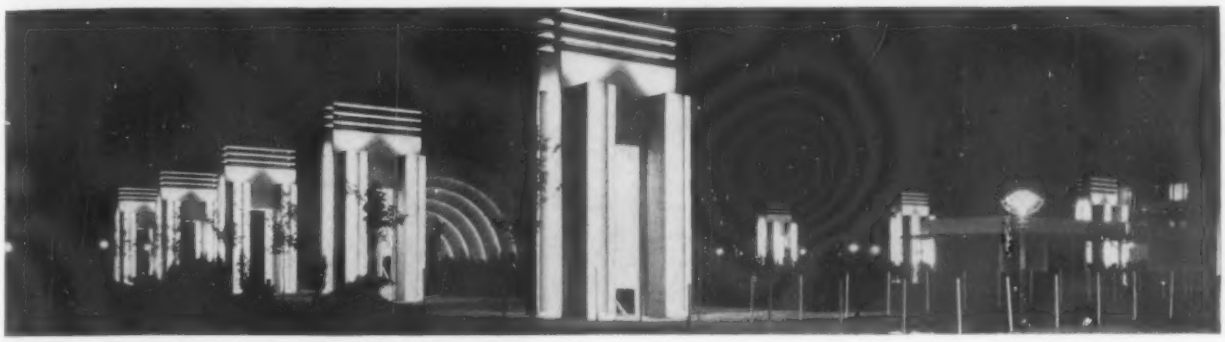
500-186

GENERAL ELECTRIC

When you write for that catalog, kindly mention THE AMERICAN CITY

Outdoor Lighting

A Section of THE AMERICAN CITY
Devoted to the Lighting of Streets, Highways, Bridges, Airports, Athletic Fields and Parks, and the Floodlighting of Public Buildings

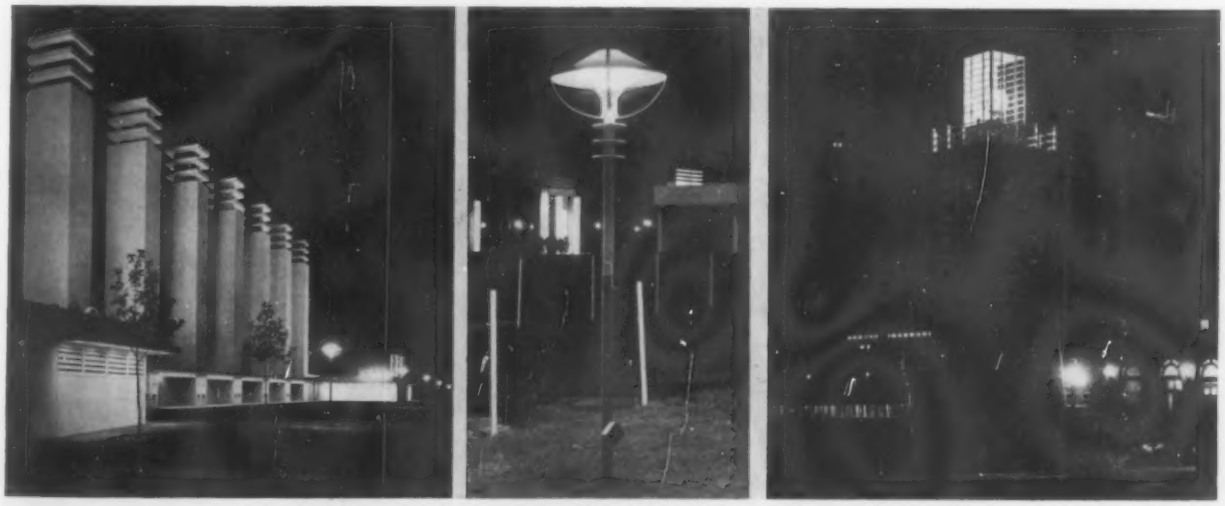


Lighting the Great Lakes Exposition

THE Great Lakes Exposition, Cleveland, is lighted with a greater intensity of light than any other exposition in American history, according to Albert N. Gonsior, construction chief for the Exposition. Many spectacular effects, including mobile colored fountains, mercury-mazda illumination, elaborate floodlighting and the most powerful beacon in the world, accentuate the architectural beauties at night.

In each portion of the grounds a different type of lighting is utilized. On the main entrance axis between the bridge and the Horticulture Building are 16 standards representing the main mast of a sailing vessel. They are 70 feet high, with a crow's nest 40 feet above the ground containing both batteries and floodlights. Just off the Hall of Progress are four huge pylons 28 feet high, each surmounted by two flag-poles. These pylons are covered with chromium-plated corrugated metal, and the reflecting surfaces combined with the colored lights cause the pylons to scintillate.

On the Mall adjacent to the ramps down into the Lakeside Exhibition Hall twenty structures resembling ships' davits, each 40 feet in height, are lighted with special equipment. Along the edge of the north Mall twelve structures 20 feet high have fins covered with the chromium-plated corrugated metal. The globes are uncovered and produce a sparkle as well as a scintillating reflection.



THREE LIGHTING FEATURES OF THE GREAT LAKES EXPOSITION
Main entrance marquee and promenade lighting.—Umbrella unit with 500-watt lamp suitable for park lighting.—36-inch aviation rotating beacon with special 2-kw lamp to give 14,000,000 beam candlepower

COMPANIONS OF
SAFETY

Headlights and Street Lights—safeguards of night traffic • With adequate street lighting, traffic accidents, traffic fatalities, can be reduced as surveys have proved and records show • To the man behind the wheel, to the pedestrian on your streets, better Street Lighting means better Sight —Safety • L-M Street Lighting Equipment can make your streets safer • Write to Line Material Company, South Milwaukee, Wis. for information • Experienced Engineers, specialists in modern Street Lighting, are at your service to assist you •

LINE MATERIAL CO.
SOUTH MILWAUKEE · WISCONSIN · U · S · A

The Horticultural Gardens are lighted with mercury lighting units which show the foliage of trees and shrubs in their natural colors, the light rays having the effect of daylight; also "shorty" mushroom lights a foot high illuminate paths, rock gardens and flower-beds.

One of the most interesting of lighting accomplishments in the grounds will be seen in the gardens, where there are two combinations of water lighting; one of them a huge mobile color fountain, and the other a bank of water cascades. The color fountain is located in the level portion of the gardens near the extreme west end. The basin of the fountain is 37 feet in diameter. Four color rings are arranged in a rectangle with a larger water ring in the center. Jets of water are thrown 34 feet into the air. Glass baffleplates rising from the center of the rings prevent splashing and permit the lighting of the fountain from below, giving an ever-changing series of lighting combinations.

The cascades are located on the hillside just a little west of the horticultural building and consist of a bank with three cascades. The pool below each contains concealed floodlights which bathe the curtain of water with changing lights. A powerful pump at the bottom returns the water to the top pool by concealed pipes.

Throughout the grounds 200 unusual lighting standards 8 feet high furnish general illumination. Each light has a 500-watt lamp in an opal glass shade covered with Micarta tops of green, red, blue and yellow.

Near the Lake Erie entrance of the Exposition is a lighthouse 30 feet high, the top of which contains the most powerful rotating beacon in the world. The beam from this beacon is 14 million candlepower, seven times that of the famed Rogers-Post beacon of New York.

Walk pylons directly in back of the main entrance form an amphitheater for the mammoth Sherwin-Williams symphony shell, shown on page 113. The lighting on the walk pylons as well as on many of the other pylons is accomplished by trough reflectors.

Color lighting in the orchestra shell will be effected against a series of concentric baffle-boards in the shell, the lighting being so controlled that any combination can be obtained at will. The lighting in the plaza on the Mall will be blue-green.

The mercury vapor lighting and mushroom lights in the Horticultural Gardens, the lighthouse beacon, fountain and cascade lighting, marquee lights, and many other lighting units were supplied by Westinghouse.

Street Lighting in England

IN an interim report the Departmental Committee on Street Lighting of the British Ministry of Transport names the functions of street lighting and some interesting conclusions. The functions are: the convenience and safety of road users; police purpose; the convenience of residents; and special purposes in shopping areas and important urban centers.

A summary of the conclusions follows:

"(1) There should be reasonable uniformity in the lighting of portions of traffic routes presenting similar characteristics, but minor variations are not necessarily disadvantageous.

"(2) The present system of administration is not conducive to the achievement of uniform and effective lighting on traffic routes.

"(3) Consideration should be given to the responsibility for the lighting of traffic routes being confined to large administrative units and to the suggestion that the cost of lighting roads should be aided by grants from national funds administered by the responsible government department.

"(4) Adjoining authorities should confer together with the object of securing uniformity of lighting on routes of common interest.

"(5) For traffic routes the minimum standard of lighting should be that which enables drivers to proceed with safety at 30 miles per hour without the use of headlights.

"(6) There is no existing code of lighting which we care to recommend in all respects for the lighting of traffic routes.

"(7) The available light should be so employed as to produce the maximum contrast between the brightness of the object to be viewed and its background, provided there is no undue glare.

"(8) Care should be taken to ensure the adequate lighting of curbs and footways.

"(9) In general, a mounting height of 25 ft., with 6-ft. overhang, is desirable.

"(10) The positioning of lamps should be studied with a view to securing the best visibility, rather than uniform spacing, but normally the distance between lamps should not exceed 150 ft.

"(11) On bends the lamps should be placed on the outside of the curve; the provision of artificial backgrounds in appropriate cases and of white curbs at bends should be considered.

"(12) Excessive glare may be largely avoided if care is taken in the selection and use of directive fittings.

"(13) Single-side lighting should be avoided except at bends.

"(14) There should be easy gradation from the standard of lighting adopted for traffic routes to that obtaining in side streets, and at the junction between lighted and unlighted portions of traffic routes.

"(15) Although the selection of road surfacing materials may necessarily be governed primarily by considerations other than those of optical properties, regard should be had, as far as practicable, to reflection characteristics and lightness of color.

"(16) The trend of design of lighting installations must have regard to the nature of the materials available for road surfacing and surface dressing.

"(17) Lighting authorities should be advised by an engineer competent to deal with street lighting.

"(18) Power to control extraneous lighting should be given to lighting authorities, but only in so far as it may be seriously detrimental to the street lighting.

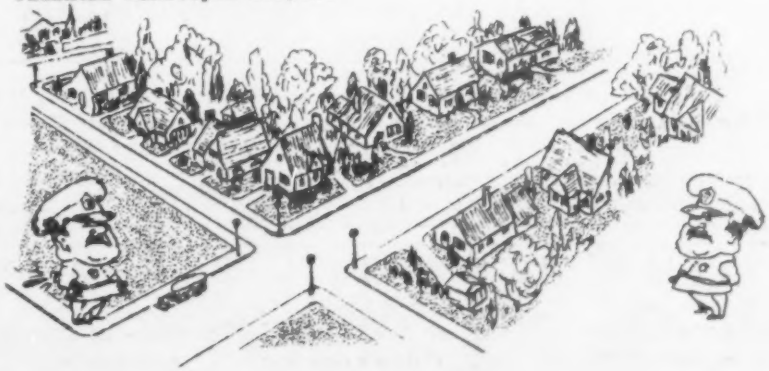
"(19) Street-lighting installations should be complete in themselves and no reliance should be placed on extraneous lighting.

"(20) Authorities contemplating the erection or modification of a street-lighting installation in the vicinity of a railway line should notify the railway company beforehand with a view to avoiding possible interference with railway signals."

Sodium Lamps on Bridge

THE installation of 67 sodium-light sources in the lighting units on the Western Gateway bridge, Schenectady, N. Y., by General Electric engineers will mark the first time that this light source has been used in an enclosed lighting luminaire in the East. Luminous arc light sources now in the units will be replaced by tubular sodium lamps.

"*There's a policeman* on your corner when the street light is burning!" says a public service company advertisement in The Oklahoma Municipal Review.



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How Pittsburgh Dramatized Safety Needs

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